

# ***STIC Search Report***

***EIC 1700***

**STIC Database Tracking Number: 130440**

**TO: Dawn Garrett  
Location: REM 10A54  
Art Unit : 1774  
August 30, 2004**

**Case Serial Number: 09/916314**

**From: Kathleen Fuller  
Location: EIC 1700  
REMSEN 4B28  
Phone: 571/272-2505  
Kathleen.Fuller@uspto.gov**

## **Search Notes**

AUG 23

Access DB# 130440

# SEARCH REQUEST FORM

Pat. & T.M. Office

Scientific and Technical Information Center

Requester's Full Name: Dawn Garrett Examiner #: 76107 Date: 8/20/2004  
Art Unit: 1774 Phone Number 272-1523 Serial Number: 09/916,314  
Mail Box and Bldg/Room Location: Remsen 10A54 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*  
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Organic EL Element / Liquid Crystal Display Device

Inventors (please provide full names):

KOTA YASHIKAWA

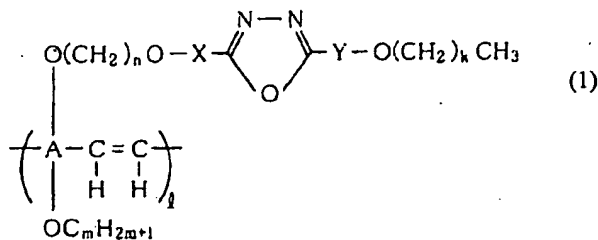
Earliest Priority Filing Date: JP 2001-8785, 1/17/2001; JP 2000-262567 8/31/2000

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search the following compound:

13. (Withdrawn): Organic EL material consisting of:

material made of organic material expressed by a general formula (1)



(Where A is a residue obtained by removing at least four hydrogen atoms from an aromatic compound or a heterocyclic compound,

X is an atomic group to which at least two groups that are selected from a group consisting of a residue obtained by removing at least two hydrogen atoms from benzene and a residue obtained by removing at least two hydrogen atoms from cyclohexane are bonded,

Y is an atomic group to which a residue obtained by removing at least two hydrogen atoms from benzene is bonded or at least two residues each obtained by removing at least two hydrogen atoms from benzene are bonded, and

k, m and n are an integer respectively.)

Clerical Prep Time: 40 Patent Family \_\_\_\_\_ WWW/Internet \_\_\_\_\_  
Online Time: \_\_\_\_\_ Other \_\_\_\_\_ Other (specify) \_\_\_\_\_

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Dawn Garrett Examiner #: 76107 Date: 8/20/2004  
Art Unit: 1774 Phone Number ~~272~~-1523 Serial Number: 07/916,314  
Mail Box and Bldg/Room Location: Remsen 10A54 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Organic El Element / Liquid Crystal Display Device

Inventors (please provide full names): \_\_\_\_\_

KOTA YOSHIKAWA

Earliest Priority Filing Date: GP 2001-8785, 1/17/2001, GP 2000-262567 8/31/2000

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search the following compound:

\*\*\*\*\*

## STAFF USE ONLY

|   | Type of Search         | Vendors and cost where applicable |
|---|------------------------|-----------------------------------|
| Searcher: <u>R. Fuller</u>              | NA Sequence (#) _____  | STN <u>✓</u>                      |
| Searcher Phone #: _____                 | AA Sequence (#) _____  | Dialog _____                      |
| Searcher Location: _____                | Structure (#) <u>4</u> | Questel/Orbit _____               |
| Date Searcher Picked Up: <u>8/30/04</u> | Bibliographic _____    | Dr.Link _____                     |
| Date Completed: <u>8/30/04</u>          | Litigation _____       | Lexis/Nexis _____                 |
| Searcher Prep & Review Time: <u>30</u>  | Fulltext _____         | Sequence Systems _____            |
| Clerical Prep Time: _____               | Patent Family _____    | WWW/Internet _____                |
| Online Time: <u>40</u>                  | Other _____            | Other (specify) _____             |

=> FILE REG

FILE 'REGISTRY' ENTERED AT 16:49:42 ON 30 AUG 2004

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

COPYRIGHT (C) 2004 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 29 AUG 2004 HIGHEST RN 735258-95-4

DICTIONARY FILE UPDATES: 29 AUG 2004 HIGHEST RN 735258-95-4

TSCA INFORMATION NOW CURRENT THROUGH MAY 21, 2004

Please note that search-term pricing does apply when conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Experimental and calculated property data are now available. For more information enter HELP PROP at an arrow prompt in the file or refer to the file summary sheet on the web at:

<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> FILE HCAPLUS

FILE 'HCAPLUS' ENTERED AT 16:49:46 ON 30 AUG 2004

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storing of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 30 Aug 2004 VOL 141 ISS 10

FILE LAST UPDATED: 29 Aug 2004 (20040829/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> D QUE

L49 STR/

O—Ak—O

1 2 3

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

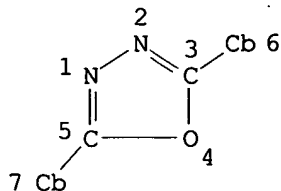
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

RING(S) ARE ISOLATED OR EMBEDDED  
NUMBER OF NODES IS 3

STEREO ATTRIBUTES: NONE  
L56 STR



*7472 structures from this query  
assuming that 7 + 7  
are benzene or cyclohexane*

NODE ATTRIBUTES:  
DEFAULT MLEVEL IS ATOM  
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
RSPEC I  
NUMBER OF NODES IS 7

STEREO ATTRIBUTES: NONE

L60 7472 SEA FILE=REGISTRY SSS FUL L56  
L62 231 SEA FILE=REGISTRY SUB=L60 SSS FUL L49  
L63 73 SEA FILE=HCAPLUS ABB=ON L62  
L64 20 SEA FILE=HCAPLUS ABB=ON L63(L) (EL OR ?LUMINES?)  
L66 9 SEA FILE=HCAPLUS ABB=ON L63 AND LIQ?(2A)CRYST?  
L67 39 SEA FILE=HCAPLUS ABB=ON L63 AND (EL OR ?LUMINES?)  
L68 42 SEA FILE=HCAPLUS ABB=ON L64 OR L66 OR L67  
L69 23 SEA FILE=HCAPLUS ABB=ON L68 AND DEV/RL  
L70 32 SEA FILE=HCAPLUS ABB=ON L68 AND DEVICE?  
L71 32 SEA FILE=HCAPLUS ABB=ON L69 OR L70

*231 structures with  
subcell search - str 1  
O-AK-O*

*Pickup both  
compounds or  
polymers*

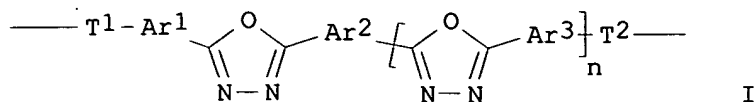
*32 CA references with utility*

=> D L71 1-32 FBIB ABS IND HITSTR

L71 ANSWER 1 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2004:533724 HCAPLUS  
DN 141:90119  
TI Polyester resin, functional **device** and organic  
**electroluminescent device** using polyester resin, and  
method of manufacturing organic **electroluminescent**  
**device**  
IN Iwasaki, Masahiro; Nukada, Katsumi  
PA Fuji Xerox Co., Ltd, Japan  
SO U.S. Pat. Appl. Publ., 53 pp.  
CODEN: USXXCO  
DT Patent  
LA English  
FAN.CNT 1

|    | PATENT NO.    | KIND | DATE     | APPLICATION NO. | DATE       |
|----|---------------|------|----------|-----------------|------------|
| PI | US 2004126616 | A1   | 20040701 | US 2003-631716  | 20030801   |
|    |               |      |          | JP 2002-365413  | A 20021217 |
|    | JP 2004196910 | A2   | 20040715 | JP 2002-365413  | 20021217   |

GI



AB A polyester resin is described comprising at least one repeating unit represented by the general formula I, wherein Ar1, Ar2, and Ar3 independently represent a (un)substituted arylene group, a (un)substituted bivalent heterocyclic group; T1 and T2 represent a linear or branched bivalent hydrocarbon group having 1 to 10 carbon atoms; and n = 0, or 1. An organic **electroluminescent device** is also described comprising a pair of electrodes composed of an anode and a cathode, at least one of which is transparent or translucent; and at least one organic compound layer that is sandwiched between the electrodes and contains at least one kind of the polyester resin. A method of fabricating the organic **electroluminescent device** is also described entailing forming at least one organic compound layer on a surface of an electrode; and forming a counter electrode on a surface of the at least one organic compound layer, wherein at least one kind of the polyester resin is used to form at least one layer of the at least one organic compound layer in the step of forming the at least one organic compound layer.

IC ICM H05B033-12

ICS C09K011-06; C08G063-685

NCL 428690000; 428917000; 313504000; 313506000; 427066000; 257040000; 528272000; 528423000

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 73, 76

ST polyester resin functional **device** org **electroluminescent device**

IT **Electroluminescent devices**

Semiconductor **device** fabrication

(polyester resin, functional **device** and organic **electroluminescent device** using polyester resin as electron transporting layer)

IT Polyesters, uses

RL: DEV (Device component use); USES (Uses)

(polyester resin, functional **device** and organic **electroluminescent device** using polyester resin as electron transporting layer)

IT 50926-11-9, Indium tin oxide

RL: DEV (Device component use); USES (Uses)

(electrode; polyester resin, functional **device** and organic **electroluminescent device** using polyester resin as electron transporting layer)

IT 25067-59-8, Polyvinylcarbazole

RL: DEV (Device component use); USES (Uses)

(electron transporting layer; polyester resin, functional **device** and organic **electroluminescent device** using polyester resin as electron transporting layer)

IT 171103-85-8P 714966-18-4P 714966-19-5P 714966-22-0P

714966-24-2P 714966-26-4P 714966-27-5P 714966-28-6P 714966-30-0P  
714966-31-1P 714966-32-2P 714966-33-3P

RL: DEV (Device component use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(electron transporting layer; polyester resin, functional **device** and organic **electroluminescent device** using polyester resin as electron transporting layer)

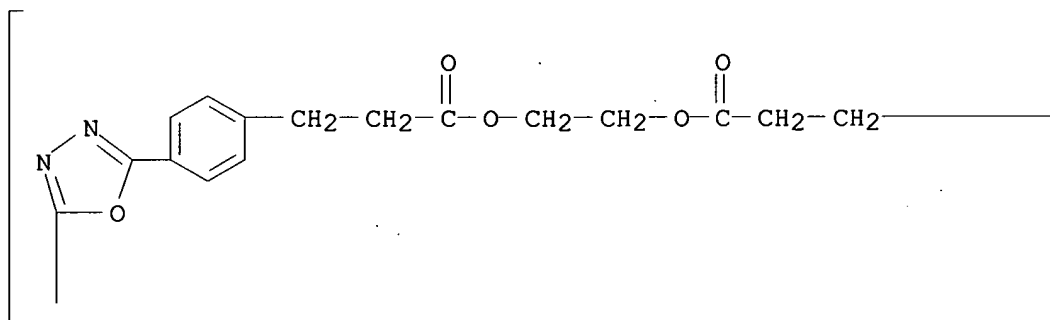
IT 123847-85-8,  $\alpha$ -NPD  
 RL: DEV (Device component use); USES (Uses)  
 (hole transporting material; polyester resin, functional device  
 and organic electroluminescent device using polyester  
 resin as electron transporting layer)

IT 2085-33-8, Alq3  
 RL: DEV (Device component use); USES (Uses)  
 (light emitting material; polyester resin, functional device  
 and organic electroluminescent device using polyester  
 resin as electron transporting layer)

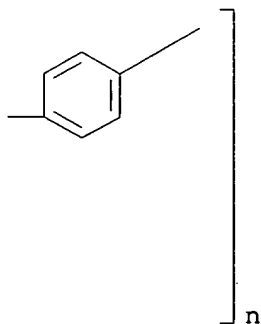
IT 714966-18-4P 714966-19-5P  
 RL: DEV (Device component use); SPN (Synthetic preparation);  
 PREP (Preparation); USES (Uses)  
 (electron transporting layer; polyester resin, functional  
 device and organic electroluminescent device  
 using polyester resin as electron transporting layer)

RN 714966-18-4 HCAPLUS  
 CN Poly[1,3,4-oxadiazole-2,5-diyl-1,4-phenylene(3-oxo-1,3-propanediyl)oxy-1,2-  
 ethanediyl]oxy(1-oxo-1,3-propanediyl)-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A

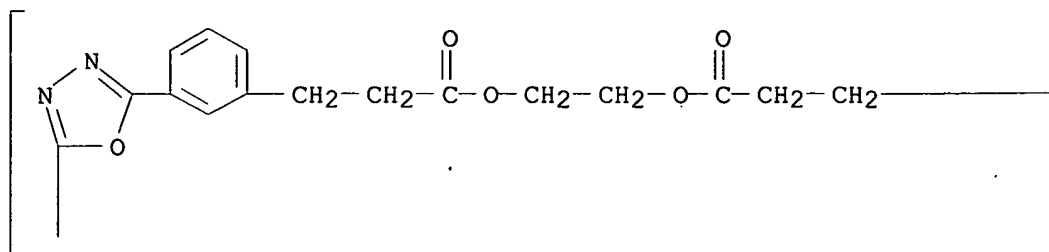


PAGE 1-B

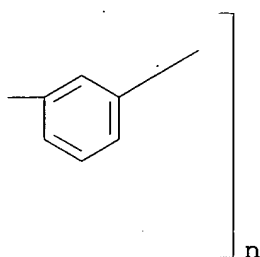


RN 714966-19-5 HCAPLUS  
 CN Poly[1,3,4-oxadiazole-2,5-diyl-1,3-phenylene(3-oxo-1,3-propanediyl)oxy-1,2-  
 ethanediyl]oxy(1-oxo-1,3-propanediyl)-1,3-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



L71 ANSWER 2 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:495621 HCAPLUS

DN 141:61845

TI Organic **electroluminescence device**

IN Seki, Mieko; Yoneyama, Hiroto; Okuda, Daisuke; Hirose, Eiichi; Ozaki, Tadayoshi; Agata, Takeshi; Ishii, Toru; Mashimo, Kiyokazu; Sato, Katsuhiko

PA Fuji Xerox Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 116 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

|    | PATENT NO.    | KIND | DATE     | APPLICATION NO. | DATE     |
|----|---------------|------|----------|-----------------|----------|
| PI | JP 2004171858 | A2   | 20040617 | JP 2002-334871  | 20021119 |
|    |               |      |          | JP 2002-334871  | 20021119 |

AB The invention relates to an organic **electroluminescent device** comprising the charge transporting polyester having the partial structure represented by  $-(T)l(O)n-C_6H_4N(Ar)X[N(Ar)C_6H_4]k(O)n(T)l-$  and  $-(T)l(O)n-C_6H_4C_6H_4N(Ar)X[N(Ar)C_6H_4C_6H_4]k(O)n(T)l-$  [Ar = Ph, 2-10 ring polynuclear aromatic, 2-10 ring condensed aromatic, etc.; X = divalent aromatic group derived from anthracene, tetracene, pyrene, etc.;  $k n l = 0$  and  $1$ ; T = C1-6 normal chain hydrocarbons and C2-10 branched hydrocarbons].

IC ICM H05B033-14

ICS C08G063-68; H05B033-22; C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 35

ST org **electroluminescence device** charge transporting polyesterIT **Electroluminescent devices**



(charge transporting polyester for organic electroluminescence device)

IT Polyesters, uses  
 RL: DEV (Device component use); SPN (Synthetic preparation);  
 PREP (Preparation); USES (Uses)  
 (charge transporting polyester for organic electroluminescence device)

IT 705274-71-1P 705274-74-4P 705274-77-7P 705274-80-2P  
 705274-82-4P 705274-85-7P 705274-87-9P 705275-35-0P  
 RL: DEV (Device component use); SPN (Synthetic preparation);  
 PREP (Preparation); USES (Uses)  
 (charge transporting polyester for organic electroluminescence device)

IT 705274-74-4P 705274-82-4P  
 RL: DEV (Device component use); SPN (Synthetic preparation);  
 PREP (Preparation); USES (Uses)  
 (charge transporting polyester for organic electroluminescence device)

RN 705274-74-4 HCAPLUS

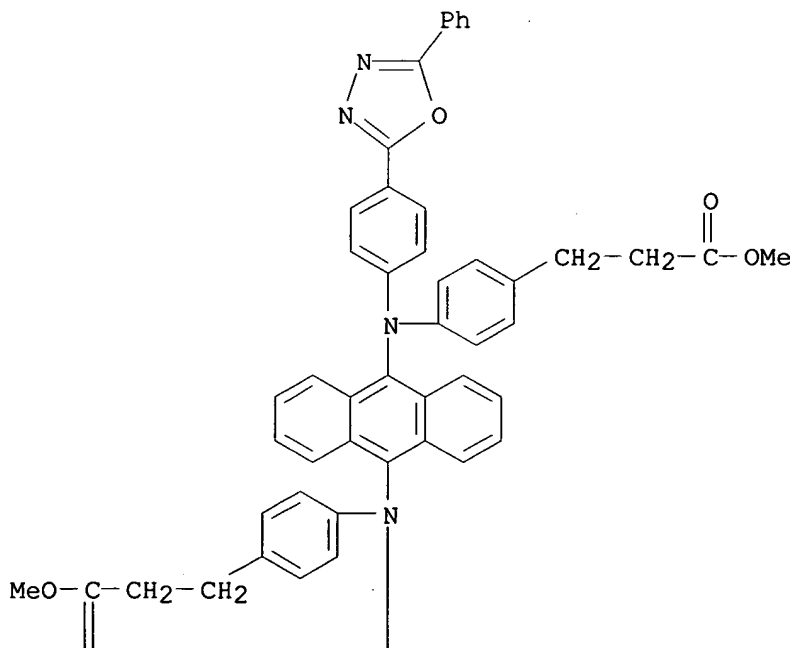
CN Benzenepropanoic acid, 4,4'-[9,10-anthracenediylbis[[4-(5-phenyl-1,3,4-oxadiazol-2-yl)phenyl]imino]]bis-, dimethyl ester, polymer with 1,2-ethanediol (9CI) (CA INDEX NAME)

CM 1

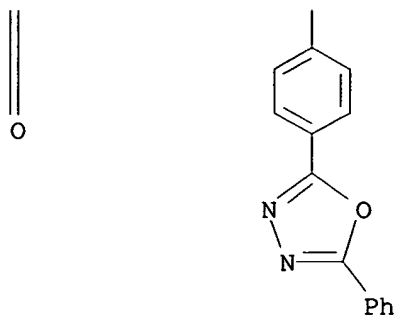
CRN 705274-73-3

CMF C62 H48 N6 O6

PAGE 1-A



PAGE 2-A



CM 2

CRN 107-21-1  
CMF C2 H6 O2

HO-CH<sub>2</sub>-CH<sub>2</sub>-OH

RN 705274-82-4 HCAPLUS  
CN Poly[oxy-1,2-ethanediyl-oxy(1-oxo-1,3-propanediyl)-1,4-phenylene[[4-(5-phenyl-1,3,4-oxadiazol-2-yl)phenyl]imino]-9,10-anthracenediyl[[4-(5-phenyl-1,3,4-oxadiazol-2-yl)phenyl]imino]-1,4-phenylene(3-oxo-1,3-propanediyl)]  
(9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

L71 ANSWER 3 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2004:458477 HCAPLUS  
DN 141:157574  
TI Improvement of efficiency of the single-layer polymer light-emitting diodes: the exciton confinement in the emitting layer by conjugated 1,3,4-oxadiazole  
AU Kim, Joo Hyun; Lee, Hoosung  
CS Department of Chemistry, Sogang University, Seoul, 121-742, S. Korea  
SO Synthetic Metals (2004), 144(2), 169-176

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

CODEN: SYMEDZ; ISSN: 0379-6779

PB Elsevier Science B.V.

DT Journal

LA English

AB Two **luminescent** polymers, poly[(2-methoxy-(5-(2-(4-oxyphenyl)-5-phenyl-1,3,4-oxadiazole)-hexyloxy))-1,4-phenylenevinylene-alt-2,5-didodecyloxy-1,4-phenylenevinylene] (I) and poly[(2-methoxy-(5-(2-(4-oxyphenyl)-5-(4-biphenyl)-1,3,4-oxadiazole)-hexyloxy))-1,4-phenylenevinylene-alt-2,5-didodecyloxy-1,4-phenylenevinylene] (II) were prepared by the Heck coupling reaction. Hole blocking-electron transporting pendant groups, conjugated 1,3,4-oxadiazole (OXD) derivs., were attached onto the main chain via linear 1,6-hexamethylenedioxy spacers. The band gap of I and II is 2.12 eV and the **photoluminescence** (PL) maximum of I and II is located at 576 and 573 nm, resp. The maximum **electroluminescence** (EL) of single layer **devices** based on I and is 583 and 580 nm, resp. These values are close to those of poly(2-methoxy-5-ethylhexyloxy-1,4-phenylenevinylene) (MEH-PPV). The relative PL quantum yield of I and II is 1.9 and 2.0 times higher than that of MEH-PPV. In the PL and EL spectra, emission from CNST (1,2-diphenyl-2'-cyanoethene) pendants was not observed, indicating that the energy transfer from OXD pendants to the main chain takes place completely. The OXD pendants did not affect the EL and PL maximum of the main chain. A single-layer EL device based on I and II had efficiency of 0.1 c.d./A at 300 mA/cm<sup>2</sup> and 0.17 c.d./A at 323 mA/cm<sup>2</sup>, resp., which was significantly higher than that of MEH-PPV measured under the same conditions. The energy levels calculated from optical and electrochem. data strongly support the evidence that OXD pendants are good hole blocking groups and promote electron-hole (exciton) recombination.

CC 35-7 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 36, 73

ST methoxyoxyphenyl oxadiazole polyphenylenevinylene prepn conjugation length electron transport; **photoluminescence** band gap polyphenylenevinylene oxadiazole pendant conjugated polymer; emitter polyphenylenevinylene oxadiazole group **EL device** efficiency

IT Polymerization

(Heck coupling; preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

IT Coupling reaction

(Heck; preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

IT Polymers, preparation

RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(conjugated; preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

IT Redox reaction

(electrochem.; preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

IT Band gap

(optical; preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

IT Poly(arylenealkenylenes)

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (oxadiazole group containing; preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

IT **Electroluminescent devices**  
 Electron-hole recombination  
 Exciton  
**Luminescence**  
**Luminescence, electroluminescence**  
 (preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

IT 728880-65-7P 728880-66-8P 728880-67-9P 728880-68-0P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (intermediate; preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

IT **728880-69-1P 728880-70-4P**  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (monomer; preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

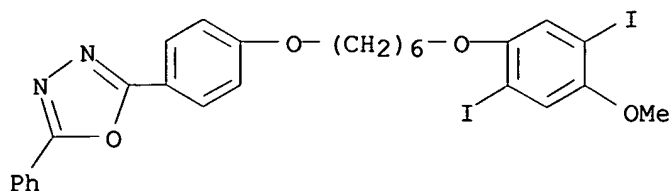
IT 708264-21-5P **728880-71-5P 728880-72-6P** 730957-72-9P  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

IT 65-85-0, Benzoic acid, reactions 92-92-2, 4-Phenylbenzoic acid  
 99-76-3, Methyl 4-hydroxy benzoate 7803-57-8, Hydrazine hydrate  
 25952-53-8, 1-[3-(Dimethylamino)propyl]-3-ethylcarbodiimide hydrochloride  
 605669-23-6  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

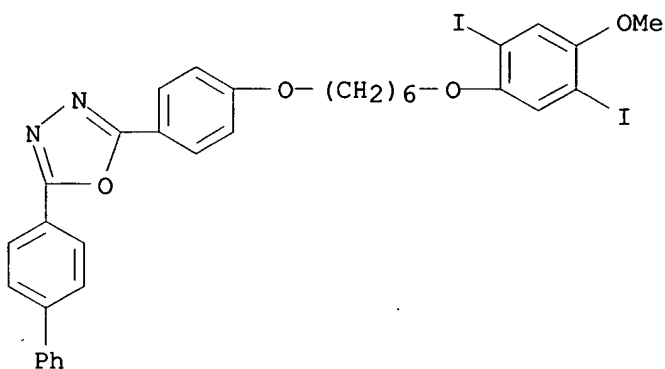
IT 10025-87-3, Phosphorus chloride oxide (PCl3O)  
 RL: RGT (Reagent); RACT (Reactant or reagent)  
 (preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

IT **728880-69-1P 728880-70-4P**  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (monomer; preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

RN 728880-69-1 HCAPLUS  
 CN INDEX NAME NOT YET ASSIGNED



RN 728880-70-4 HCAPLUS  
CN INDEX NAME NOT YET ASSIGNED



IT 728880-71-5P 728880-72-6P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(preparation of poly(oxadiazole-phenylene vinylene)s with exciton confinement for improved efficiency of single-layer light-emitting diodes)

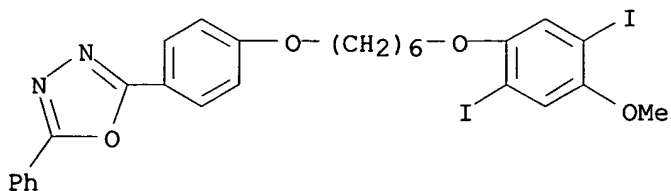
RN 728880-71-5 HCAPLUS

CN 1,3,4-Oxadiazole, 2-[4-[[6-(2,5-diiodo-4-methoxyphenoxy)hexyl]oxy]phenyl]-5-phenyl-, polymer with 1,4-bis(dodecyloxy)-2,5-diethenylbenzene (9CI)  
(CA INDEX NAME)

CM 1

CRN 728880-69-1

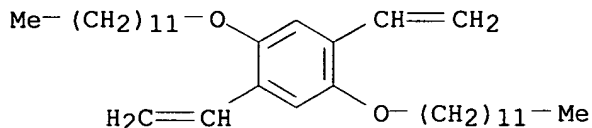
CMF C27 H26 I2 N2 O4



CM 2

CRN 209050-49-7

CMF C34 H58 O2



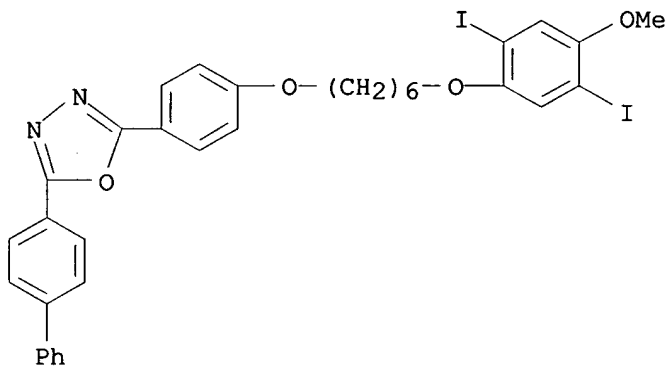
RN 728880-72-6 HCAPLUS

CN 1,3,4-Oxadiazole, 2-[1,1'-biphenyl]-4-yl-5-[4-[[6-(2,5-diiodo-4-methoxyphenoxy)hexyl]oxy]phenyl]-, polymer with 1,4-bis(dodecyloxy)-2,5-diethenylbenzene (9CI) (CA INDEX NAME)

CM 1

CRN 728880-70-4

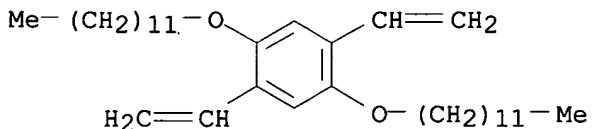
CMF C33 H30 I2 N2 O4



CM 2

CRN 209050-49-7

CMF C34 H58 O2



RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 4 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2004:379636 HCAPLUS

DN 141:106810

TI Triphenylamine- and oxadiazole-substituted poly(1,4-phenylenevinylene)s: synthesis, photo-, and electroluminescent properties

AU Pu, Yong-Jin; Kurata, Takashi; Soma, Minoru; Kido, Junji; Nishide,

Hiroyuki  
 CS Department of Applied Chemistry, Waseda University, Tokyo, 169-8555, Japan  
 SO Synthetic Metals (2004), 143(2), 207-214  
 CODEN: SYMEDZ; ISSN: 0379-6779  
 PB Elsevier Science B.V.  
 DT Journal  
 LA English  
 AB Novel triphenylamine- and oxadiazole-substituted poly(1,4-phenylenevinylene)s (PPV) or CN-PPV (P1-4) were synthesized by the Wittig-Horner, Knoevenagel, and Gilch type polymerization. The polymers exhibited good solubility in common organic solvents, relatively high **photoluminescent** (PL) efficiency, and high HOMO level for ca. -5.1 eV. The simple double-layer **devices** of triphenylamine-PPV (P1), ITO/PEDOT: PSS/P1/Cs/Al, exhibited a very high luminance of 510 cd/m<sup>2</sup> under a low driving voltage of 3 V, demonstrating the effectiveness of triphenylamine moiety as a substituent of PPV derivs. for a light-emitting polymer. Triphenylamine-CN-PPV (P2) exhibited bipolar reversible redox in CV. The bipolar type of PPVs, P2 and triphenylamine-oxadiazole-PPV (P3), showed lower luminance and efficiency than those of the p-type of PPV (P1).  
 CC 35-5 (Chemistry of Synthetic High Polymers)  
 ST triphenylamine oxadiazole PPV synthesis **luminescence**  
**electroluminescence**  
 IT Cyclic voltammetry  
 Electric current-potential relationship  
**Electroluminescent devices**  
 Energy level  
 HOMO (molecular orbital)  
 LUMO (molecular orbital)  
**Luminescence**  
**Luminescence, electroluminescence**  
 Molecular weight  
 Molecular weight distribution  
 Redox potential  
 UV and visible spectra  
 (synthesis, photo-, and **electroluminescent** properties of triphenylamine- and oxadiazole-substituted poly(1,4-phenylenevinylene)s: synthesis, photo-, and **electroluminescent** properties)  
 IT Poly(arylenealkenylenes)  
 RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (synthesis, photo-, and **electroluminescent** properties of triphenylamine- and oxadiazole-substituted poly(1,4-phenylenevinylene)s: synthesis, photo-, and **electroluminescent** properties)  
 IT 50926-11-9, ITO 155090-83-8, PEDOT-PSS  
 RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)  
 (synthesis, photo-, and **electroluminescent** properties of triphenylamine- and oxadiazole-substituted poly(1,4-phenylenevinylene)s: synthesis, photo-, and **electroluminescent** properties)  
 IT 385395-44-8P 386264-44-4P 717824-22-1P 717824-23-2P  
 717854-14-3P 717906-01-9P 717907-78-3P 717908-04-8P  
 RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (synthesis, photo-, and **electroluminescent** properties of triphenylamine- and oxadiazole-substituted poly(1,4-

phenylenevinylene)s: synthesis, photo-, and **electroluminescent** properties)

IT 36809-26-4 220186-63-0 **335276-14-7**

RL: RCT (Reactant); RACT (Reactant or reagent)  
(synthesis, photo-, and **electroluminescent** properties of  
triphenylamine- and oxadiazole-substituted poly(1,4-  
phenylenevinylene)s: synthesis, photo-, and **electroluminescent**  
properties)

IT 213749-91-8P 267221-88-5P 385395-42-6P 385395-43-7P 385395-43-7P  
717824-15-2P 717824-16-3P 717824-17-4P **717824-18-5P**

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(synthesis, photo-, and **electroluminescent** properties of  
triphenylamine- and oxadiazole-substituted poly(1,4-  
phenylenevinylene)s: synthesis, photo-, and **electroluminescent**  
properties)

IT **717854-14-3P**

RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic  
preparation); PREP (Preparation); USES (Uses)  
(synthesis, photo-, and **electroluminescent** properties of  
triphenylamine- and oxadiazole-substituted poly(1,4-  
phenylenevinylene)s: synthesis, photo-, and **electroluminescent**  
properties)

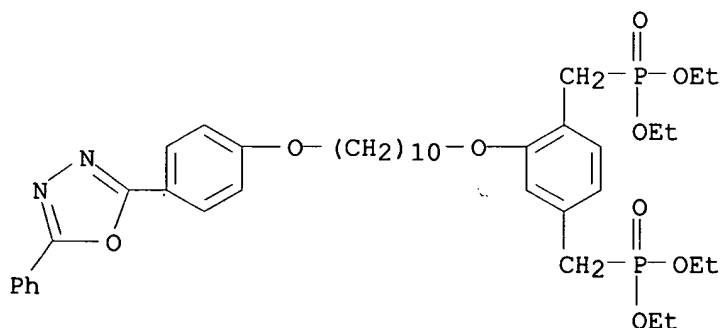
RN 717854-14-3 HCAPLUS

CN Phosphonic acid, [[2-[[10-[4-(5-phenyl-1,3,4-oxadiazol-2-  
yl)phenoxy]decyl]oxy]-1,4-phenylene]bis(methylene)]bis-, tetraethyl ester,  
polymer with 4'-(diphenylamino)-4-[(2-ethylhexyl)oxy][1,1'-biphenyl]-2,5-  
dicarboxaldehyde (9CI) (CA INDEX NAME)

CM 1

CRN 717824-18-5

CMF C40 H56 N2 O9 P2

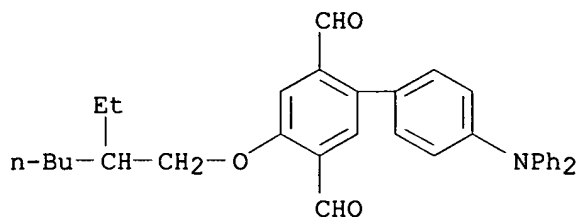


CM 2

CRN 385395-43-7

CMF C34 H35 N O3



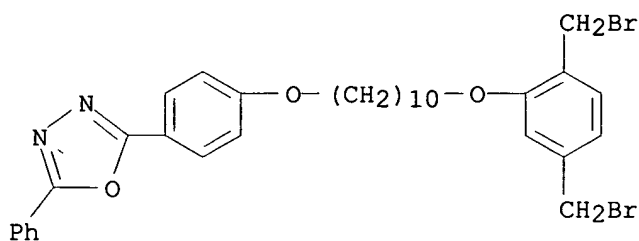


IT 335276-14-7

RL: RCT (Reactant); RACT (Reactant or reagent)  
(synthesis, photo-, and **electroluminescent** properties of triphenylamine- and oxadiazole-substituted poly(1,4-phenylenevinylene)s: synthesis, photo-, and **electroluminescent** properties)

RN 335276-14-7 HCAPLUS

CN 1,3,4-Oxadiazole, 2-[4-[[10-[2,5-bis(bromomethyl)phenoxy]decyl]oxy]phenyl]-5-phenyl- (9CI) (CA INDEX NAME)

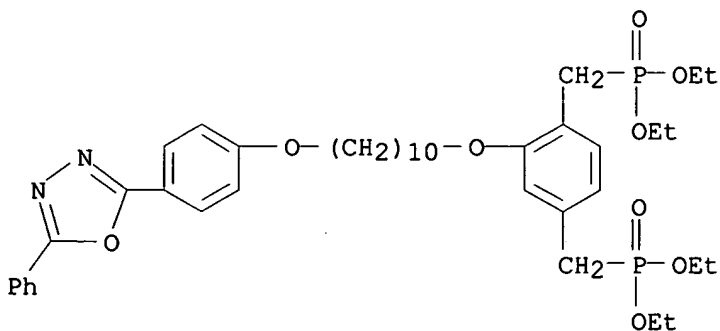


IT 717824-18-5P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(synthesis, photo-, and **electroluminescent** properties of triphenylamine- and oxadiazole-substituted poly(1,4-phenylenevinylene)s: synthesis, photo-, and **electroluminescent** properties)

RN 717824-18-5 HCAPLUS

CN Phosphonic acid, [[2-[[10-[4-(5-phenyl-1,3,4-oxadiazol-2-yl)phenoxy]decyl]oxy]-1,4-phenylene]bis(methylene)]bis-, tetraethyl ester (9CI) (CA INDEX NAME)



RE.CNT 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 5 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2004:319833 HCAPLUS  
DN 141:54721  
TI Enhancement of efficiency in **luminescent** polymer by  
incorporation of conjugated 1,3,4-oxadiazole side chains as  
hole-blocker/electron-transporter  
AU Kim, Joo Hyun; Lee, Hoosung  
CS Department of Chemistry, Sogang University, Seoul, 121-742, S. Korea  
SO Synthetic Metals (2004), 143(1), 13-19  
CODEN: SYMEDZ; ISSN: 0379-6779  
PB Elsevier Science B.V.  
DT Journal  
LA English  
AB A novel **luminescent** polymer poly(2-methoxy-5-{6'-[2''-(4'''-  
oxyphenyl)-5'''-phenyl-1'',3'',4'''-oxadiazole]-hexyloxy}-1,4-  
phenylenevinylene-alt-2,5-bis-dodecyloxy-1,4-phenylenevinylene) (MPPOXA),  
was synthesized by the Wittig reaction. Electron withdrawing pendant,  
2-(4-oxyphenyl)-5-phenyl-1,3,4-oxadiazole (OXD), is separated from the main  
chain via linear 1,6-hexamethylene-dioxy chain. The band gap figured out  
from the UV-Vis spectrum and **photoluminescence** (PL) maximum of the  
polymer are 2.08 eV and 585 nm, resp. These values are similar to those  
of MEH-PPV [poly(2-methoxy-5-ethylhexyloxy-1,4-phenylenevinylene)] (2.12  
eV and 580 nm). The maximum of **electroluminescence** (EL)  
of the **device** based on single layer structure (ITO/MPPOXA/Al)  
appeared at 586 nm, which is similar to that of MEH-PPV (583 nm). In PL  
and **EL** spectra, emission from OXD pendants was not observed Single  
layer **EL device** based on MPPOXA have an external  
quantum efficiency of 0.01% at 2.3 mA/mm<sup>2</sup>, which is significantly higher  
than that of MEH-PPV (0.0002% at 2.4 mA/mm<sup>2</sup>) measured under the same  
conditions. The HOMO and LUMO energy levels of the polymer main chain  
figured out from the cyclic voltammogram and the UV-Vis spectrum are -4.96  
and -2.88 eV, resp., which are similar to those of MEH-PPV (-4.98, -2.86  
eV). The estimated HOMO and LUMO energy levels of the pendant were -6.17 and  
-2.47 eV, resp. LUMO energy level is significant lower than those of the  
main chain. These results suggest that OXD units do not affect the  
emission maximum of the main chain comparison with MEH-PPV. The pendants  
block the injected holes from the anode and enhance electron-transporting  
property.  
CC 35-5 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 73, 76  
ST oxadiazole polyphenylenevinylene **luminescence**  
**electroluminescence** conjugated polymer  
IT Polymers, preparation  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(conjugated; preparation of **luminescent** polyphenylenevinylene  
polymer by incorporation of conjugated oxadiazole side chains as  
hole-blocker/electron-transporter)  
IT Redox reaction  
(electrochem.; preparation of **luminescent** polyphenylenevinylene  
polymer by incorporation of conjugated oxadiazole side chains as  
hole-blocker/electron-transporter)  
IT HOMO (molecular orbital)  
LUMO (molecular orbital)  
**Luminescence**  
**Luminescence, electroluminescence**

## Polymerization

(preparation of **luminescent** polyphenylenevinylene polymer by incorporation of conjugated oxadiazole side chains as hole-blocker/electron-transporter)

IT Poly(arylenealkenylenes)

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation of **luminescent** polyphenylenevinylene polymer by incorporation of conjugated oxadiazole side chains as hole-blocker/electron-transporter)

IT 20744-11-0P, 1-(6-Bromohexyloxy)-4-methoxybenzene 697299-41-5P  
708259-55-6P 708259-56-7P **708259-57-8P 708259-58-9P**

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(intermediate; preparation of **luminescent** polyphenylenevinylene polymer by incorporation of conjugated oxadiazole side chains as hole-blocker/electron-transporter)

IT 123415-45-2P **708259-59-0P**

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(monomer; preparation of **luminescent** polyphenylenevinylene polymer by incorporation of conjugated oxadiazole side chains as hole-blocker/electron-transporter)

IT **708259-60-3P** 708264-21-5P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation of **luminescent** polyphenylenevinylene polymer by incorporation of conjugated oxadiazole side chains as hole-blocker/electron-transporter)

IT 99-76-3, Methyl 4-hydroxybenzoate 100-44-7, Benzyl chloride, reactions 150-76-5, 4-Methoxyphenol 603-35-0, Triphenylphosphine, reactions 629-03-8, 1,6-Dibromohexane 7803-57-8, Hydrazine hydrate 30525-89-4, Paraformaldehyde

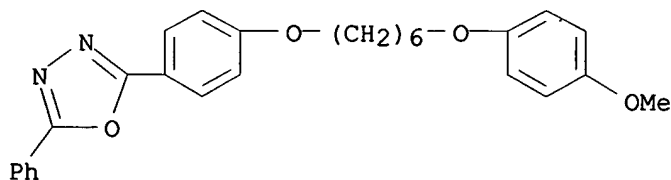
RL: RCT (Reactant); RACT (Reactant or reagent)  
(starting material; preparation of **luminescent** polyphenylenevinylene polymer by incorporation of conjugated oxadiazole side chains as hole-blocker/electron-transporter)

IT **708259-57-8P 708259-58-9P**

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(intermediate; preparation of **luminescent** polyphenylenevinylene polymer by incorporation of conjugated oxadiazole side chains as hole-blocker/electron-transporter)

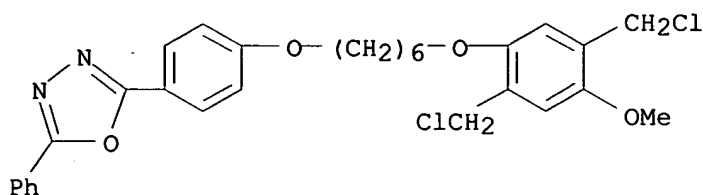
RN 708259-57-8 HCAPLUS

CN 1,3,4-Oxadiazole, 2-[4-[[6-(4-methoxyphenoxy)hexyl]oxy]phenyl]-5-phenyl- (9CI) (CA INDEX NAME)



RN 708259-58-9 HCAPLUS

CN 1,3,4-Oxadiazole, 2-[4-[[6-[2,5-bis(chloromethyl)-4-methoxyphenoxy]hexyl]oxy]phenyl]-5-phenyl- (9CI) (CA INDEX NAME)



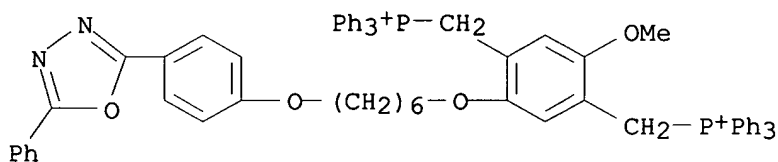
IT 708259-59-0P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(monomer; preparation of **luminescent** polyphenylenevinylene polymer by incorporation of conjugated oxadiazole side chains as hole-blocker/electron-transporter)

RN 708259-59-0 HCAPLUS

CN Phosphonium, [[2-methoxy-5-[[6-[4-(5-phenyl-1,3,4-oxadiazol-2-yl)phenoxy]hexyl]oxy]-1,4-phenylene]bis(methylene)]bis[triphenyl-, dichloride (9CI) (CA INDEX NAME)



● 2 Cl<sup>-</sup>

IT 708259-60-3P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (preparation of **luminescent** polyphenylenevinylene polymer by incorporation of conjugated oxadiazole side chains as hole-blocker/electron-transporter)

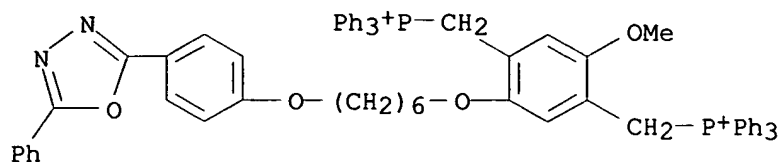
RN 708259-60-3 HCAPLUS

CN Phosphonium, [[2-methoxy-5-[[6-[4-(5-phenyl-1,3,4-oxadiazol-2-yl)phenoxy]hexyl]oxy]-1,4-phenylene]bis(methylene)]bis[triphenyl-, dichloride, polymer with 2,5-bis(dodecyloxy)-1,4-benzenedicarboxaldehyde (9CI) (CA INDEX NAME)

CM 1

CRN 708259-59-0

CMF C65 H60 N2 O4 P2 . 2 Cl

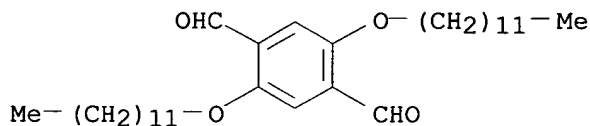


● 2 Cl<sup>-</sup>

CM 2

CRN 123415-45-2

CMF C32 H54 O4



RE.CNT 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

- L71 ANSWER 6 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2004:299147 HCAPLUS  
 DN 141:24047  
 TI Synthesis and characterization of poly(1,4-phenylenevinylene) derivatives containing **liquid crystalline** oxadiazole groups  
 AU Sun, Xiaobo; Li, Min; Liu, Dong; Zhang, Peng; Tian, Wenjing  
 CS Institute of Materials Science and Engineering and A. G. MacDiarmid Laboratory, Jilin University, Changchun, 130012, Peop. Rep. China  
 SO Journal of Applied Polymer Science (2004), 91(1), 396-403  
 CODEN: JAPNAB; ISSN: 0021-8995  
 PB John Wiley & Sons, Inc.  
 DT Journal  
 LA English  
 AB Two novel poly(1,4-phenylenevinylene) (PPV) derivs. containing **liquid crystalline** oxadiazole side chains were prepared by a dehydrochlorination process. The homopolymer poly[2-methoxy-5-((2-methoxy-phenyl)-5-hexyloxy-phenyloxy-1,3,4-oxadiazole)-1,4-phenylenevinylene] (HO-PE6) is insol. in common solvents, whereas the copolymer poly[2-methoxy-5-((2-methoxy-phenyl)-5-hexyloxy-phenyloxy-1,3,4-oxadiazole)-(2-methoxy-5-(2'-ethylhexyloxy))-1,4-phenylenevinylene] (CO-PE6) is soluble in common solvents such as chloroform, THF, and p-xylene. The mol. structure of CO-PE6 was confirmed by FTIR, 1H-NMR, UV-vis spectroscopy, and polarized light microscopy. CO-PE6 showed a maximum emission at 556 nm in chloroform and at 564 nm in solid film, when excited at 450 nm. The maximum **electroluminescence** emission of the **device** indium-tin oxide (ITO)CO-PE6/Al is at 555 nm. The turn-on voltage of LEDs based on CO-PE6 and MEH-PPV is 6.5 and 8.5 V, resp. The electron mobility of CO-PE6 is higher than that of MEH-PPV based on the results of current-voltage and electrochem. behavior of both MEH-PPV and CO-PE6.

- CC 35-5 (Chemistry of Synthetic High Polymers)  
Section cross-reference(s): 36, 73, 75
- ST polyphenylenevinylene liq cryst oxadiazole side group  
prepn property LED
- IT LUMO (molecular orbital)  
(HOMO gap; synthesis and characterization of poly(phenylenevinylene)  
derivs. containing **liquid crystalline** oxadiazole groups and  
LEDs based on poly(phenylenevinylene))
- IT HOMO (molecular orbital)  
(LUMO gap; synthesis and characterization of poly(phenylenevinylene)  
derivs. containing **liquid crystalline** oxadiazole groups and  
LEDs based on poly(phenylenevinylene))
- IT Redox reaction  
(electrochem.; synthesis and characterization of  
poly(phenylenevinylene) derivs. containing **liquid crystalline**  
oxadiazole groups and LEDs based on poly(phenylenevinylene))
- IT **Liquid crystals**  
(monomer; synthesis and characterization of poly(phenylenevinylene)  
derivs. containing **liquid crystalline** oxadiazole groups and  
LEDs based on poly(phenylenevinylene))
- IT Electric current-potential relationship  
**Electroluminescent devices**  
Electron mobility  
HOMO (molecular orbital)  
LUMO (molecular orbital)  
**Liquid crystals**, polymeric  
**Luminescence**  
**Luminescence, electroluminescence**  
Redox potential  
UV and visible spectra  
(synthesis and characterization of poly(phenylenevinylene) derivs.  
containing **liquid crystalline** oxadiazole groups and LEDs based  
on poly(phenylenevinylene))
- IT Poly(arylenealkenylenes)  
RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic  
preparation); PREP (Preparation); USES (Uses)  
(synthesis and characterization of poly(phenylenevinylene) derivs.  
containing **liquid crystalline** oxadiazole groups and LEDs based  
on poly(phenylenevinylene))
- IT Electronic transition  
( $\pi$ - $\pi^*$ ; synthesis and characterization of poly(phenylenevinylene)  
derivs. containing **liquid crystalline** oxadiazole groups and  
LEDs based on poly(phenylenevinylene))
- IT 7429-90-5, Aluminum, uses 50926-11-9, ITO  
RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)  
(electrode in LED; synthesis and characterization of  
poly(phenylenevinylene) derivs. containing **liquid crystalline**  
oxadiazole groups and LEDs based on poly(phenylenevinylene))
- IT 20744-11-0P **503073-08-3P** 697299-40-4P 697299-41-5P  
697299-42-6P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(intermediate in monomer preparation; synthesis and characterization of  
poly(phenylenevinylene) derivs. containing **liquid crystalline**  
oxadiazole groups and LEDs based on poly(phenylenevinylene))
- IT **697299-43-7P**  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP  
(Preparation); RACT (Reactant or reagent)  
(monomer; synthesis and characterization of poly(phenylenevinylene))

derivs. containing **liquid crystalline** oxadiazole groups and LEDs based on poly(phenylenevinylene))

IT 209625-37-6P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (monomer; synthesis and characterization of poly(phenylenevinylene) derivs. containing **liquid crystalline** oxadiazole groups and LEDs based on poly(vphenylenevinylene))

IT 94-30-4 100-07-2, p-Methoxybenzoyl chloride 150-76-5, p-Hydroxyanisole 629-03-8, 1,6-Dibromohexane 7803-57-8, Hydrazine monohydrate 10035-10-6, Hydrogen bromide, reactions 30525-89-4, Paraformaldehyde  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reactant in monomer preparation; synthesis and characterization of poly(phenylenevinylene) derivs. containing **liquid crystalline** oxadiazole groups and LEDs based on poly(phenylenevinylene))

IT 146370-51-6P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (reactant in monomer preparation; synthesis and characterization of poly(phenylenevinylene) derivs. containing **liquid crystalline** oxadiazole groups and LEDs based on poly(phenylenevinylene))

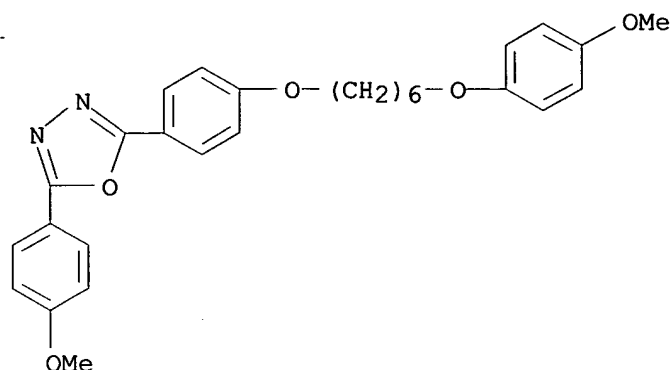
IT 138184-36-8, MEH-PPV  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (synthesis and characterization of poly(phenylenevinylene) derivs. containing **liquid crystalline** oxadiazole groups and LEDs based on poly(phenylenevinylene))

IT 697299-45-9P  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (synthesis and characterization of poly(phenylenevinylene) derivs. containing **liquid crystalline** oxadiazole groups and LEDs based on poly(phenylenevinylene))

IT 697299-44-8P 697758-75-1P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (synthesis and characterization of poly(phenylenevinylene) derivs. containing **liquid crystalline** oxadiazole groups and LEDs based on poly(phenylenevinylene))

IT 503073-08-3P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (intermediate in monomer preparation; synthesis and characterization of poly(phenylenevinylene) derivs. containing **liquid crystalline** oxadiazole groups and LEDs based on poly(phenylenevinylene))

RN 503073-08-3 HCAPLUS  
 CN 1,3,4-Oxadiazole, 2-[4-[[6-(4-methoxyphenoxy)hexyl]oxy]phenyl]-5-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)

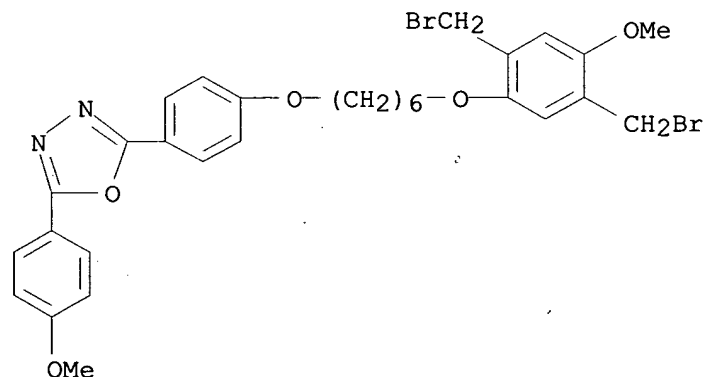


IT 697299-43-7P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(monomer; synthesis and characterization of poly(phenylenevinylene) derivs. containing **liquid crystalline** oxadiazole groups and LEDs based on poly(phenylenevinylene))

RN 697299-43-7 HCAPLUS

CN 1,3,4-Oxadiazole, 2-[4-[[6-[2,5-bis(bromomethyl)-4-methoxyphenoxy]hexyl]oxy]phenyl]-5-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



IT 697299-45-9P

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(synthesis and characterization of poly(phenylenevinylene) derivs. containing **liquid crystalline** oxadiazole groups and LEDs based on poly(phenylenevinylene))

RN 697299-45-9 HCAPLUS

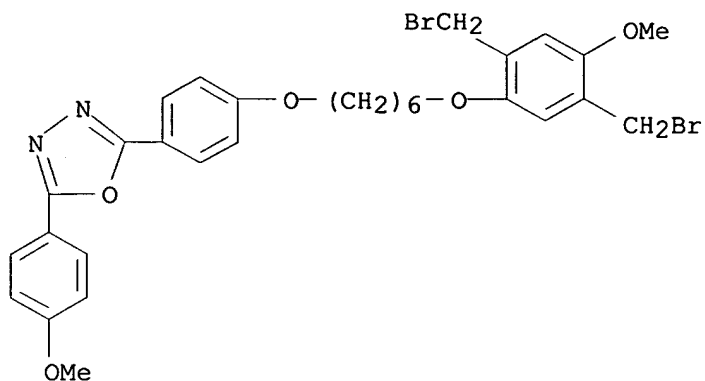
CN 1,3,4-Oxadiazole, 2-[4-[[6-[2,5-bis(bromomethyl)-4-methoxyphenoxy]hexyl]oxy]phenyl]-5-(4-methoxyphenyl)-, polymer with 1,4-bis(bromomethyl)-2-[(2-ethylhexyl)oxy]-5-methoxybenzene (9CI) (CA INDEX NAME)

CM 1

CRN 697299-43-7

CMF C30 H32 Br2 N2 O5

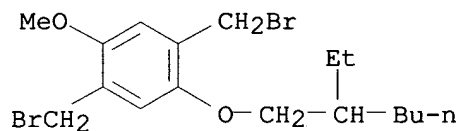




CM 2

CRN 209625-37-6

CMF C17 H26 Br2 O2



IT 697299-44-8P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(synthesis and characterization of poly(phenylenevinylene) derivs.  
containing **liquid crystalline** oxadiazole groups and LEDs based  
on poly(phenylenevinylene))

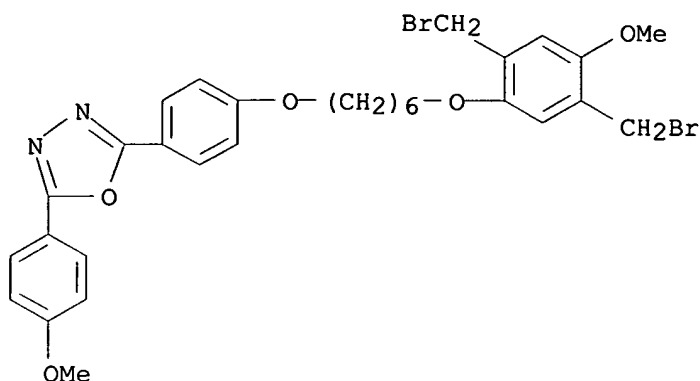
RN 697299-44-8 HCAPLUS

CN 1,3,4-Oxadiazole, 2-[4-[[6-[2,5-bis(bromomethyl)-4-methoxyphenoxy]hexyl]oxy]phenyl]-5-(4-methoxyphenyl)-, homopolymer (9CI)  
(CA INDEX NAME)

CM 1

CRN 697299-43-7

CMF C30 H32 Br2 N2 O5



RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 7 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:748186 HCAPLUS

DN 140:225379

TI Electrical and optical properties of a new organic  
**electroluminescent** materials of oxadiazole derivatives

AU Zhang, Minglong; Xia, Yiben; Li, Min; Wang, Linjun; Zhang, Weili

CS Department of Materials Science and Engineering, Shanghai University,  
Shanghai, 201800, Peop. Rep. China

SO Guangzi Xuebao (2003), 32(6), 672-675

CODEN: GUXUED; ISSN: 1004-4213

PB Kexue Chubanshe

DT Journal

LA Chinese

AB The elec. and optical properties of the small oxadiazole (OXD) derivs. are  
determined by DSC, polarized optical microscope (POM), UV absorption spectrum,  
electrochem. measurement and manufacturing multi-layers **device**.

**Liquid crystal**, electron-transport, cavity-transport,  
**luminescence** and other excellent characterizations are found in  
these R-OXD materials. The multi-layers **EL device**  
with R-OXD layer begins to emit light at below 5 V and a luminance level  
of 1000 cd/m<sup>2</sup> can be obtained at only 7 V. This series of compds. is  
beneficial to decrease the threshold voltage in **devices** and to  
improve luminous intensity and efficiency.

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)

Section cross-reference(s): 22, 75, 76

ST oxadiazole deriv **electroluminescent device**

IT **Liquid crystals**

(**liquid crystal** property of new small oxadiazole  
derivs.)

IT Electric current-potential relationship

Electrochemical analysis

(of LED using new small oxadiazole derivs.)

IT **Luminescence, electroluminescence**

(of LED using new small oxadiazole derivs. with respect to voltage)

IT UV and visible spectra

(of new small oxadiazole derivs.)

IT 50926-11-9, Indium tin oxide

RL: **DEV (Device component use)**; USES (Uses)

(anode; elec. and optical properties of new organic

electroluminescent materials of oxadiazole derivs.)

IT 503073-07-2 503073-08-3  
 RL: PRP (Properties)  
 (elec. and optical properties of new organic **electroluminescent** materials of oxadiazole derivs.)

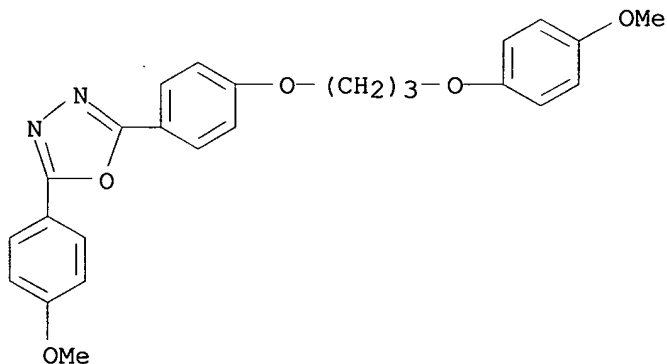
IT 7429-90-5, Aluminum, uses  
 RL: **DEV (Device component use)**; **USES (Uses)**  
 (electrode; elec. and optical properties of new organic **electroluminescent** materials of oxadiazole derivs.)

IT 208264-13-5, Poly(2,3-dibutoxy-1,4-phenylenevinylene)  
 RL: **DEV (Device component use)**; **USES (Uses)**  
 (hole-transport layer; elec. and optical properties of new organic **electroluminescent** materials of oxadiazole derivs.)

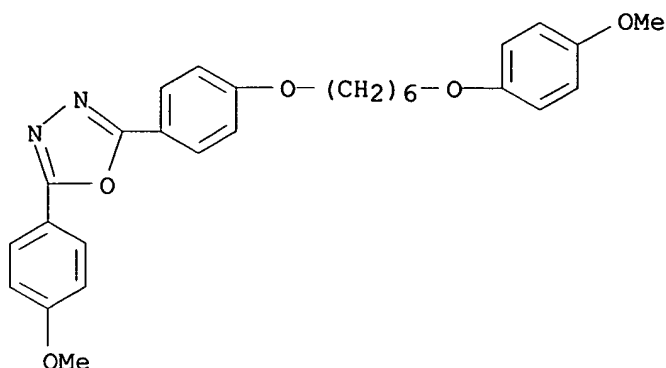
IT 7784-18-1, Aluminum fluoride (AlF<sub>3</sub>)  
 RL: **DEV (Device component use)**; **USES (Uses)**  
 (mid-electrode; elec. and optical properties of new organic **electroluminescent** materials of oxadiazole derivs.)

IT 503073-07-2 503073-08-3  
 RL: PRP (Properties)  
 (elec. and optical properties of new organic **electroluminescent** materials of oxadiazole derivs.)

RN 503073-07-2 HCAPLUS  
 CN 1,3,4-Oxadiazole, 2-[4-[3-(4-methoxyphenoxy)propoxy]phenyl]-5-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



RN 503073-08-3 HCAPLUS  
 CN 1,3,4-Oxadiazole, 2-[4-[[6-(4-methoxyphenoxy)hexyl]oxy]phenyl]-5-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



L71 ANSWER 8 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:353898 HCAPLUS

DN 138:376103

TI **Electroluminescent device with liquid crystal copolymer**

IN Mochizuki, Hiroataka; Ikeda, Tomiki

PA Kokusaki Kiban Zairyo Kenkyusho K. K., Japan; JSR Ltd.

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

|    | PATENT NO.    | KIND | DATE     | APPLICATION NO.                  | DATE                 |
|----|---------------|------|----------|----------------------------------|----------------------|
| PI | JP 2003133073 | A2   | 20030509 | JP 2001-332087<br>JP 2001-332087 | 20011030<br>20011030 |

AB The invention refers to an **electroluminescent device** comprising a copolymer of a **liquid crystal** monomer having a **liquid crystal** side chain, and a functional monomer 2-[CH<sub>2</sub>:C(R<sub>1</sub>)CO<sub>2</sub>(CH<sub>2</sub>)<sub>m</sub>O-p-C<sub>6</sub>H<sub>4</sub>-p-C<sub>6</sub>H<sub>4</sub>]-5-Y-1,3,4-oxadiazole- [R<sub>1</sub> = H, Me; Y = -p-C<sub>6</sub>H<sub>4</sub>N(CH<sub>3</sub>)<sub>2</sub>, -p-C<sub>6</sub>H<sub>4</sub>N(Ph)<sub>2</sub>, 3-(N-methylcarbazolyl); 3-(N-phenylcarbazolyl); m = 2 - 11].

IC ICM H05B033-14

ICS C08F220-36; C09K011-06; C07C255-54

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescent device liq crystal polymer**

IT **Electroluminescent devices**  
**Liquid crystals, polymeric**  
**(electroluminescent device with liquid crystal copolymer)**

IT 521971-84-6P 521971-85-7P 521971-87-9P

521971-88-0P 521971-89-1P 521971-90-4P

RL: DEV (Device component use); SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

**(electroluminescent device with liquid crystal copolymer)**

IT 79-41-4, Methacrylic acid, reactions 920-46-7, Methacrylic acid chloride  
1611-56-9, 11-Bromo-1-undecanol 4286-55-9, 6-Bromo-1-hexanol  
19812-93-2, 4-Cyano-4'-hydroxybiphenyl 33940-27-1 50816-19-8,  
8-Bromo-1-octanol 51449-84-4 125775-57-7

RL: RCT (Reactant); RACT (Reactant or reagent)  
(electroluminescent device with liquid  
crystal copolymer)

IT 47304-16-5P, 4'-(6-Hydroxyhexyloxy)biphenyl-4-carboxylic acid  
111232-16-7P 117318-91-9P 141085-16-7P 521971-76-6P  
521971-77-7P 521971-78-8P 521971-79-9P  
521971-81-3P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(electroluminescent device with liquid  
crystal copolymer)

IT 521971-84-6P 521971-87-9P 521971-88-0P  
521971-89-1P 521971-90-4P

RL: DEV (Device component use); SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(electroluminescent device with liquid  
crystal copolymer)

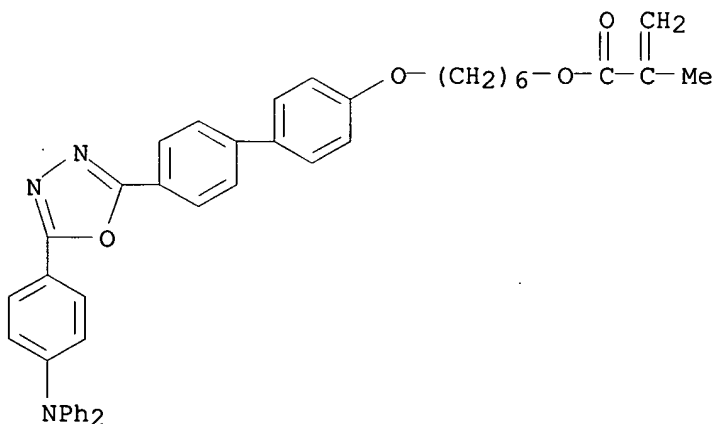
RN 521971-84-6 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 6-[[4'-cyano[1,1'-biphenyl]-4-yl]oxy]hexyl  
ester, polymer with 6-[[4'-[5-[4-(diphenylamino)phenyl]-1,3,4-oxadiazol-2-  
yl][1,1'-biphenyl]-4-yl]oxy]hexyl 2-methyl-2-propenoate (9CI) (CA INDEX  
NAME)

CM 1

CRN 521971-76-6

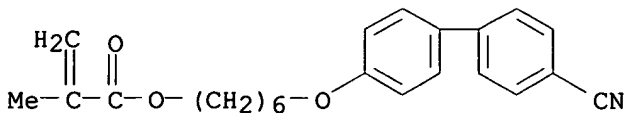
CMF C42 H39 N3 O4



CM 2

CRN 117318-91-9

CMF C23 H25 N O3



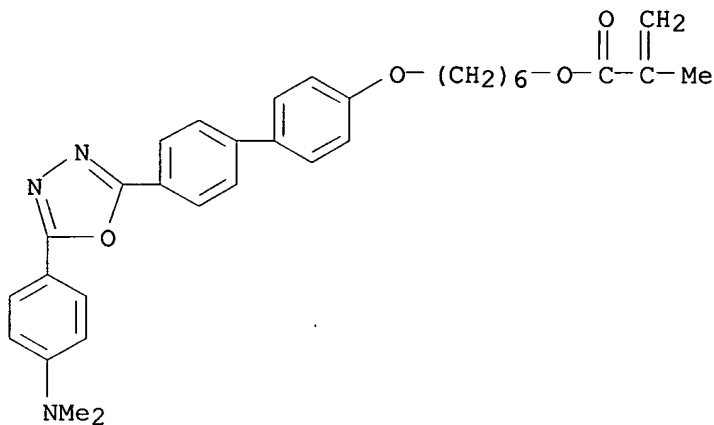
RN 521971-87-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 6-[(4'-cyano[1,1'-biphenyl]-4-yl)oxy]hexyl ester, polymer with 6-[[4'-[5-[4-(dimethylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]hexyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 521971-78-8

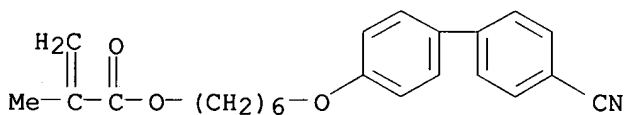
CMF C32 H35 N3 O4



CM 2

CRN 117318-91-9

CMF C23 H25 N O3



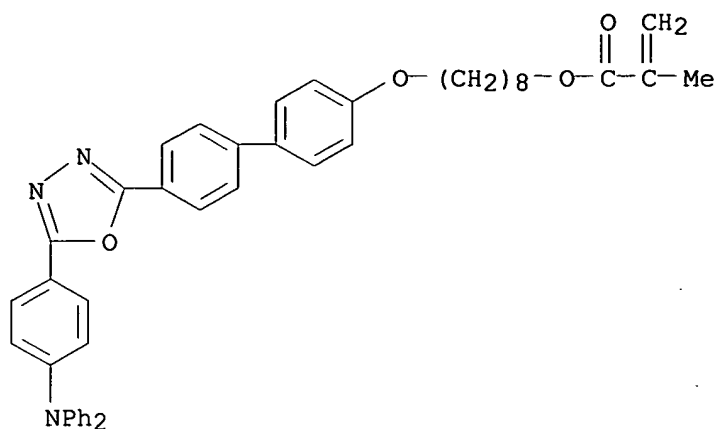
RN 521971-88-0 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 6-[(4'-cyano[1,1'-biphenyl]-4-yl)oxy]hexyl ester, polymer with 8-[[4'-[5-[4-(diphenylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]octyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 521971-79-9

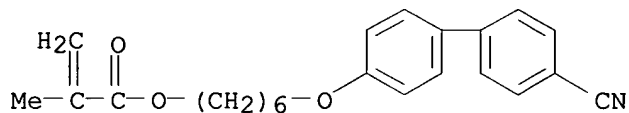
CMF C44 H43 N3 O4



CM 2

CRN 117318-91-9

CMF C23 H25 N O3



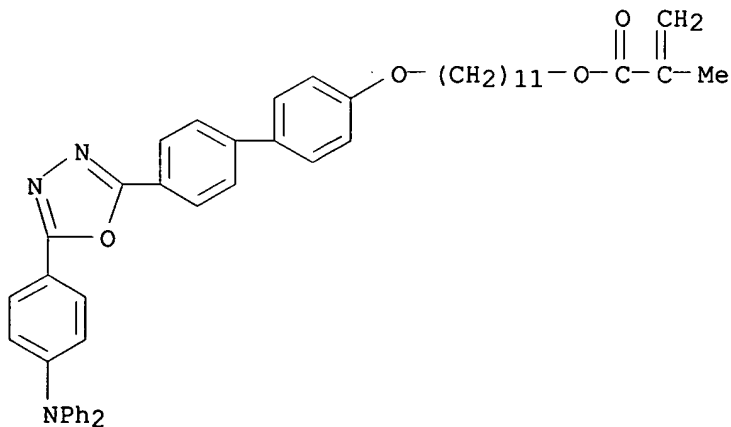
RN 521971-89-1 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 6-[(4'-cyano[1,1'-biphenyl]-4-yl)oxy]hexyl ester, polymer with 11-[[4'-[5-[4-(diphenylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]undecyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 521971-81-3

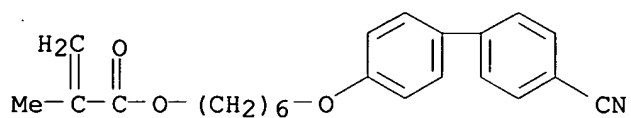
CMF C47 H49 N3 O4



CM 2

CRN 117318-91-9

CMF C23 H25 N O3



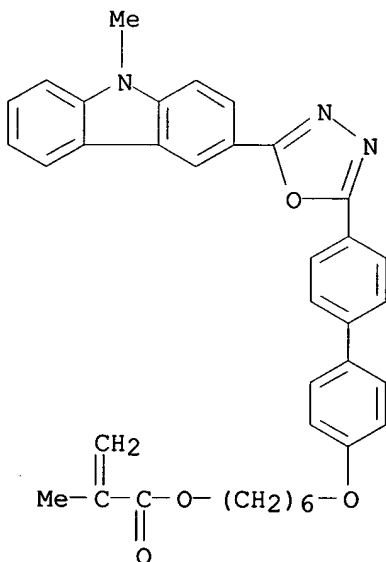
RN 521971-90-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 6-[(4'-cyano[1,1'-biphenyl]-4-yl)oxy]hexyl ester, polymer with 6-[[4'-[5-[4-(diphenylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]hexyl 2-methyl-2-propenoate and 6-[[4'-[5-(9-methyl-9H-carbazol-3-yl)-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]hexyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 521971-77-7

CMF C37 H35 N3 O4

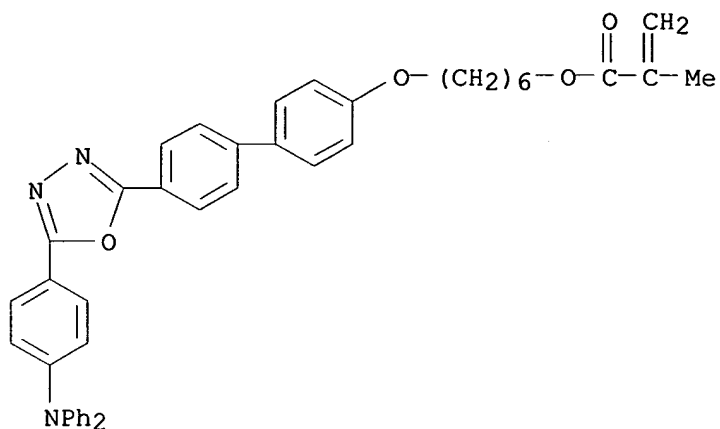


CM 2

CRN 521971-76-6

CMF C42 H39 N3 O4

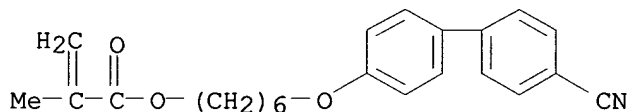




CM 3

CRN 117318-91-9

CMF C23 H25 N O3



IT 521971-76-6P 521971-78-8P 521971-79-9P

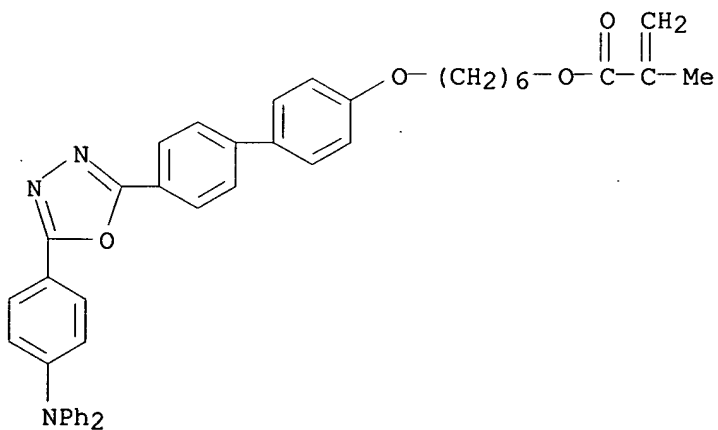
521971-81-3P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(electroluminescent device with liquid crystal copolymer)

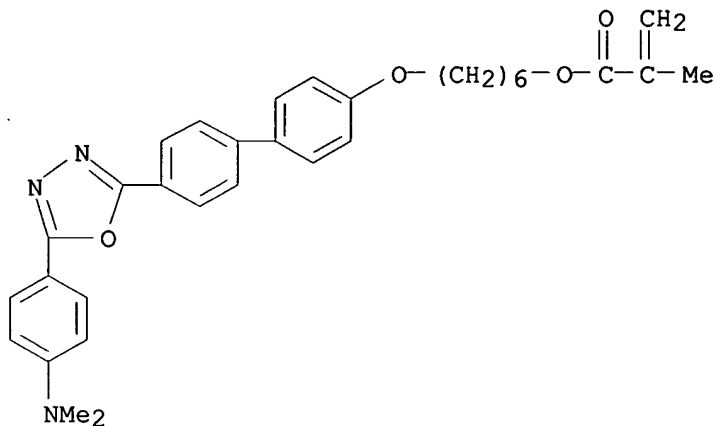
RN 521971-76-6 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 6-[[[4'-[5-[4-(diphenylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]hexyl ester (9CI) (CA INDEX NAME)



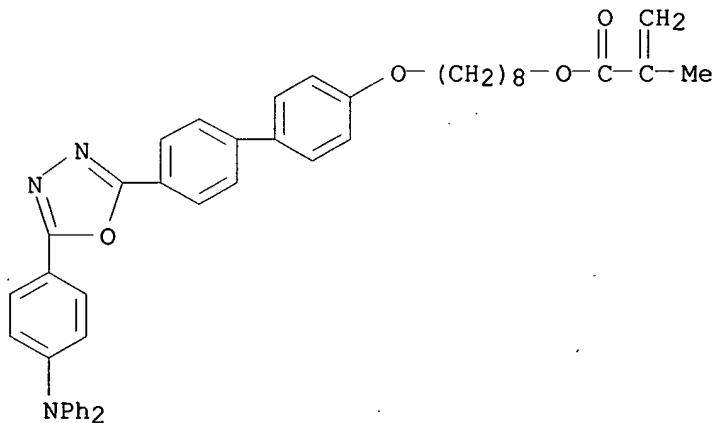
RN 521971-78-8 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 6-[[4'-[5-[4-(dimethylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]hexyl ester (9CI) (CA INDEX NAME)



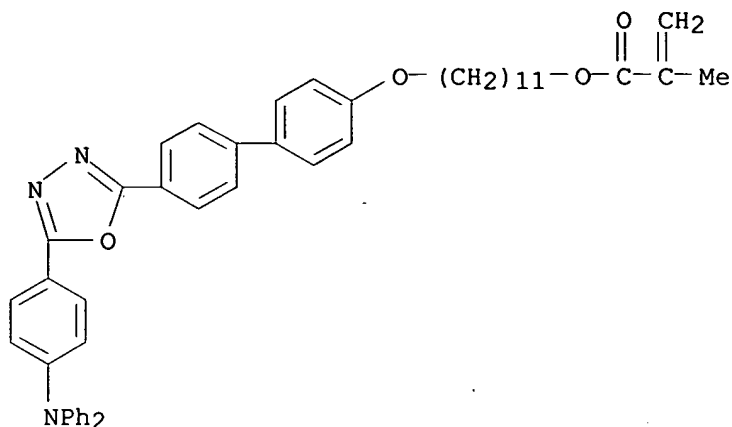
RN 521971-79-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 8-[[4'-[5-[4-(diphenylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]octyl ester (9CI) (CA INDEX NAME)



RN 521971-81-3 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 11-[[4'-[5-[4-(diphenylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]undecyl ester (9CI) (CA INDEX NAME)



L71 ANSWER 9 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2003:331237 HCAPLUS  
 DN 139:28441  
 TI Side-Chain Polymer **Liquid Crystals** Containing Oxadiazole and Amine Moieties with Carrier-Transporting Abilities for Single-Layer Light-Emitting Diodes  
 AU Kawamoto, Masuki; Mochizuki, Hiroyuki; Shishido, Atsushi; Tsutsumi, Osamu; Ikeda, Tomiki; Lee, Bong; Shiota, Yasuhiko  
 CS Chemical Resources Laboratory, Tokyo Institute of Technology, Midori-ku, Yokohama, 226-8503, Japan  
 SO Journal of Physical Chemistry B (2003), 107(21), 4887-4893  
 CODEN: JPCBFK; ISSN: 1520-6106  
 PB American Chemical Society  
 DT Journal  
 LA English  
 AB Electrochem. and **electroluminescent (EL)** properties of a polymer **liquid crystal (PLC)** composed of an oxadiazole moiety as an electron-transporting unit and an amine moiety as a hole-transporting unit in the same side chain were studied. The polymer is a good candidate for a single-layer light-emitting diode (LED) because it combines carrier-transporting and emission properties in a single species. A polymer LED was fabricated with a simple configuration of ITO/PLC/MgAg to demonstrate **EL** behavior. The **device** showed the **EL** emission in a blue region with a maximum brightness of 13 cd/m<sup>2</sup> at 26 V also, a polarized **EL** emission was observed due to self-assemblies of mesogenic chromophores. The dichroic ratio of the absorption of the polymer film determined by polarized absorption spectra measured with the polarized beam parallel and perpendicular to the rubbing direction was 1.8, and the dichroic ratio of the emission is 1.6. These results clearly indicate that the origin of the polarized emission from the polymer film is the anisotropic arrangement of the mesogenic chromophores.  
 CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 72, 75  
 ST side chain polymer **liq crystal** oxadiazole amine moiety LED; carrier transporting layer light emitting diode polymer  
 IT Cyclic voltammetry  
 Electric current-potential relationship  
**Electroluminescent devices**

Half wave potential

**Liquid crystals**, polymeric

**Luminescence**

**Luminescence, electroluminescence**

Oxidation potential

UV and visible spectra

(side-chain polymer **liquid crystals** containing oxadiazole and amine moieties with carrier-transporting abilities for single-layer light-emitting diodes and its electrochem. and spectral properties)

IT 538366-53-9

RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)

(PM600XDMA; side-chain polymer **liquid crystals** containing oxadiazole and amine moieties with carrier-transporting abilities for single-layer light-emitting diodes and its electrochem. and spectral properties)

IT 37271-44-6 50926-11-9, Indium tin oxide

RL: **DEV (Device component use)**; USES (Uses)

(side-chain polymer **liquid crystals** containing oxadiazole and amine moieties with carrier-transporting abilities for single-layer light-emitting diodes and its electrochem. and spectral properties)

IT 538366-53-9

RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)

(PM600XDMA; side-chain polymer **liquid crystals** containing oxadiazole and amine moieties with carrier-transporting abilities for single-layer light-emitting diodes and its electrochem. and spectral properties)

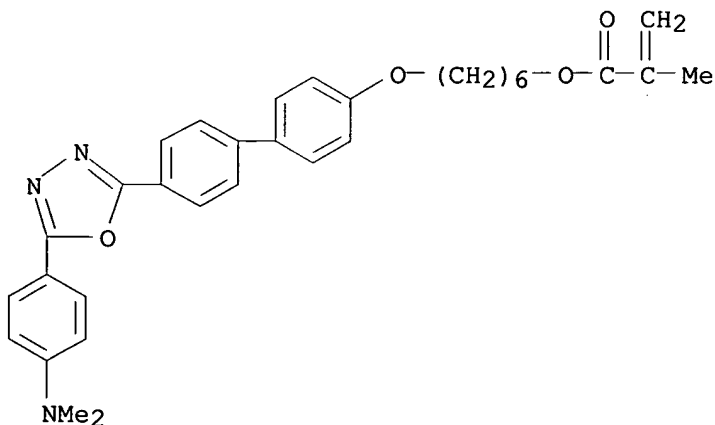
RN 538366-53-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 6-[[4'-[5-[4-(dimethylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]hexyl ester, homopolymer (9CI)  
(CA INDEX NAME)

CM 1

CRN 521971-78-8

CMF C32 H35 N3 O4



RE.CNT 80 THERE ARE 80 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

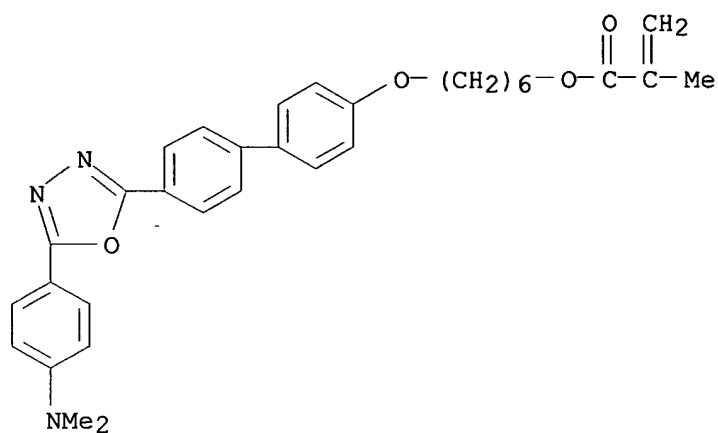
L71 ANSWER 10 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2003:305262 HCAPLUS

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

DN 139:37137  
 TI A Novel Class of Photo- and Electroactive Polymers Containing Oxadiazole and Amine Moieties in a Side Chain  
 AU Mochizuki, Hiroyuki; Hasui, Takahiro; Kawamoto, Masuki; Ikeda, Tomiki; Adachi, Chihaya; Taniguchi, Yoshio; Shirota, Yasuhiko /  
 CS Chemical Resources Laboratory, Tokyo Institute of Technology, Yokohama, Midori-ku, 226-8503, Japan  
 SO Macromolecules (2003), 36(10), 3457-3464  
 CODEN: MAMOBX; ISSN: 0024-9297  
 PB American Chemical Society  
 DT Journal  
 LA English  
 AB A new class of photo- and electroactive polymer materials showing an **liquid-crystalline** (LC) phase were designed and synthesized: four kinds of polymers with both oxadiazole and arylamine moieties as carrier-transporting groups in the side chain. Among them, the polymers with a dimethylamine and a methylcarbazole moiety show LC phases. Furthermore, all the polymers emitted strong blue fluorescence, and their fluorescent quantum yields were over 0.6. The aligned sample of the polymer with the carbazole moiety emitted polarized fluorescence at room temperature One-layer type **electroluminescent (EL) devices** were fabricated by using the polymer with a triphenylamine moiety, which exhibited the highest quantum yield (.apprx.0.82), and found to emit the **EL** emission at blue region.  
 CC 37-3 (Plastics Manufacture and Processing)  
 ST oxadiazole amine side chain polymer photoelectroactive  
 IT **Luminescence, electroluminescence**  
 (photo- and electroactive polymers containing oxadiazole and amine moieties in side chain)  
 IT **538366-53-9P 540473-62-9P 540473-63-0P**  
**540473-64-1P 540473-65-2P 540473-66-3P 540473-67-4P**  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (photo- and electroactive polymers containing oxadiazole and amine moieties in side chain)  
 IT 79-41-4, Methacrylic acid, reactions 1197-19-9 1484-12-4 4286-55-9  
 58574-03-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (photo- and electroactive polymers containing oxadiazole and amine moieties in side chain)  
 IT 21240-56-2P 46994-29-0P 47304-16-5P 51449-84-4P 87220-68-6P  
 91828-10-3P 141085-16-7P 148357-89-5P 160432-87-1P  
**521971-76-6P 521971-77-7P 521971-78-8P**  
**521971-81-3P 540473-54-9P 540473-55-0P 540473-56-1P**  
**540473-57-2P 540473-59-4P 540473-60-7P 540473-61-8P**  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (photo- and electroactive polymers containing oxadiazole and amine moieties in side chain)  
 IT **538366-53-9P 540473-62-9P 540473-63-0P**  
**540473-64-1P 540473-65-2P**  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (photo- and electroactive polymers containing oxadiazole and amine moieties in side chain)  
 RN 538366-53-9 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, 6-[[[4'-[5-[4-(dimethylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]hexyl ester, homopolymer (9CI)  
 (CA INDEX NAME)

CM 1

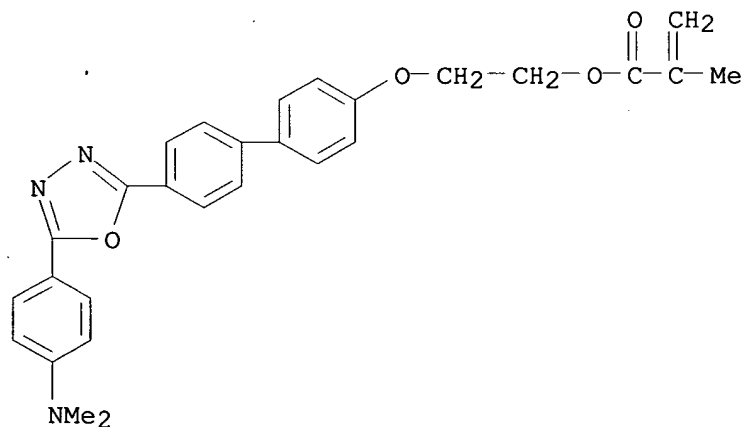
CRN 521971-78-8  
CMF C32 H35 N3 O4



RN 540473-62-9 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, 2-[[4'-[5-[4-(dimethylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]ethyl ester, homopolymer (9CI)  
(CA INDEX NAME)

CM 1

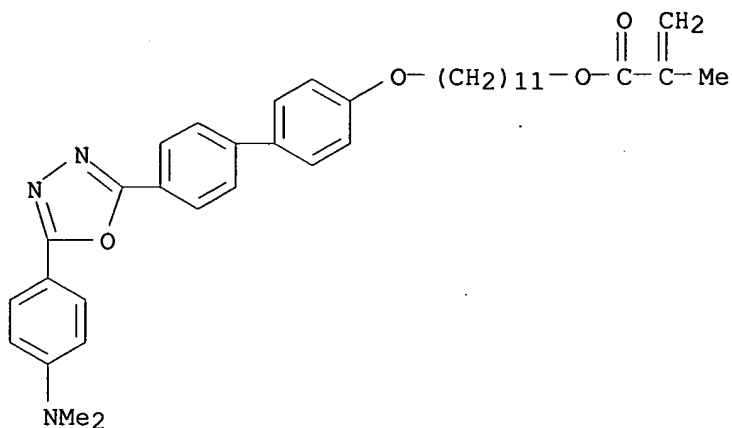
CRN 540473-59-4  
CMF C28 H27 N3 O4



RN 540473-63-0 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, 11-[[4'-[5-[4-(dimethylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]undecyl ester, homopolymer (9CI)  
(CA INDEX NAME)

CM 1

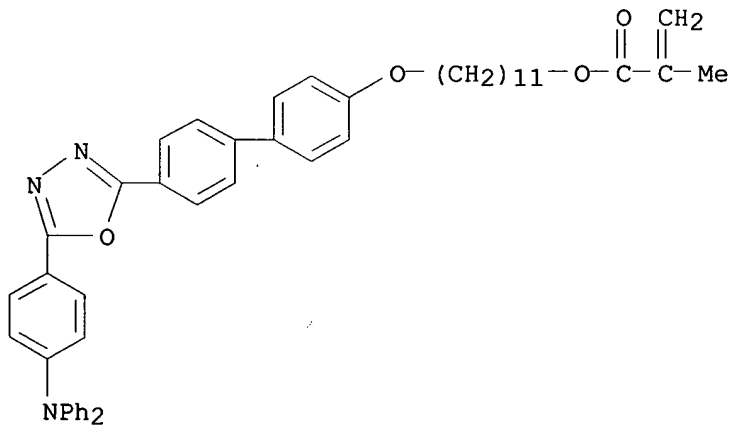
CRN 540473-60-7  
CMF C37 H45 N3 O4



RN 540473-64-1 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, 11-[[4'-[5-[4-(diphenylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]undecyl ester, homopolymer (9CI)  
 (CA INDEX NAME)

CM 1

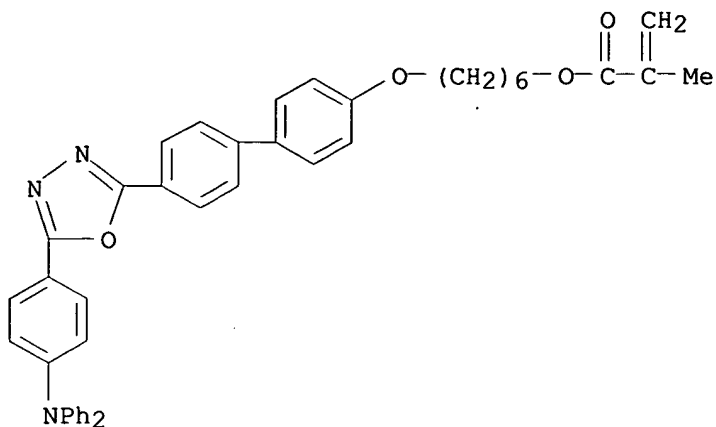
CRN 521971-81-3  
 CMF C47 H49 N3 O4



RN 540473-65-2 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, 6-[[4'-[5-[4-(diphenylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]hexyl ester, homopolymer (9CI)  
 (CA INDEX NAME)

CM 1

CRN 521971-76-6  
 CMF C42 H39 N3 O4

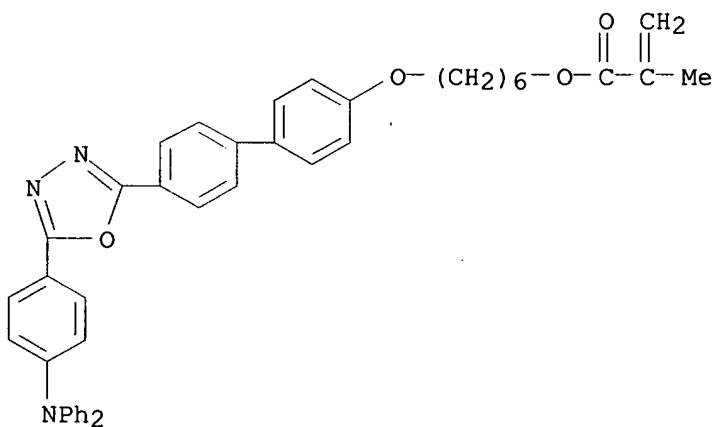


IT 521971-76-6P 521971-78-8P 521971-81-3P  
540473-59-4P 540473-60-7P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(photo- and electroactive polymers containing oxadiazole and amine moieties  
in side chain)

RN 521971-76-6 HCAPLUS

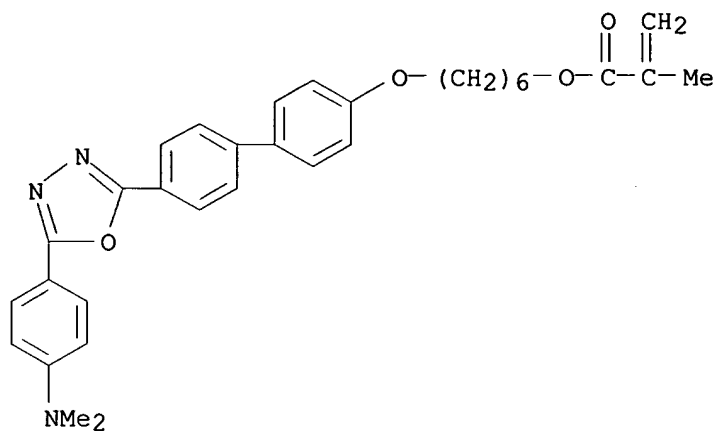
CN 2-Propenoic acid, 2-methyl-, 6-[[4'-[5-[4-(diphenylamino)phenyl]-1,3,4-  
oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]hexyl ester (9CI) (CA INDEX NAME)



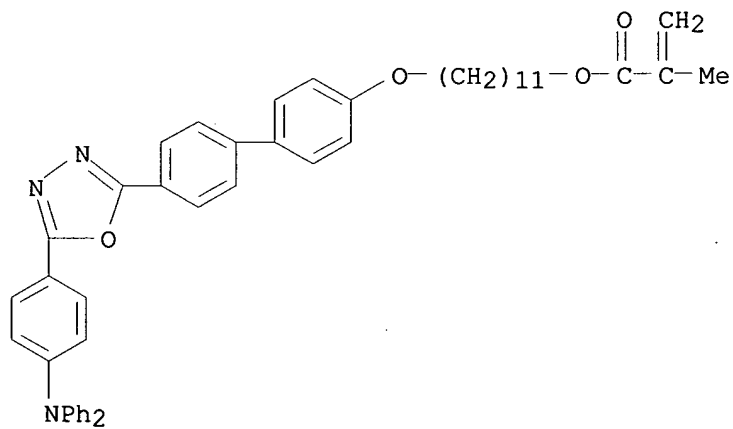
RN 521971-78-8 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 6-[[4'-[5-[4-(dimethylamino)phenyl]-1,3,4-  
oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]hexyl ester (9CI) (CA INDEX NAME)

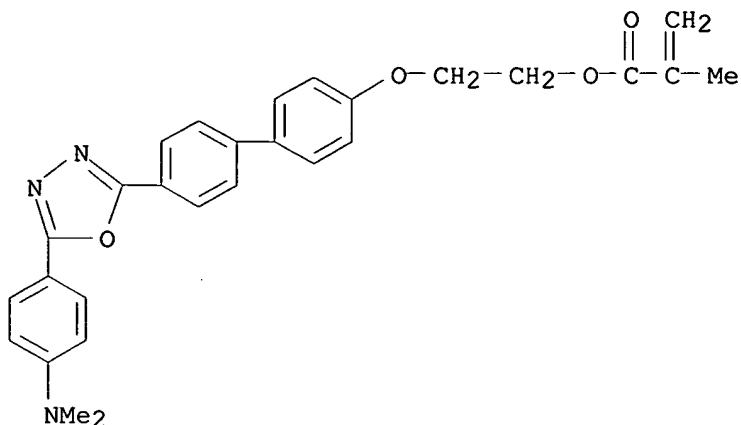




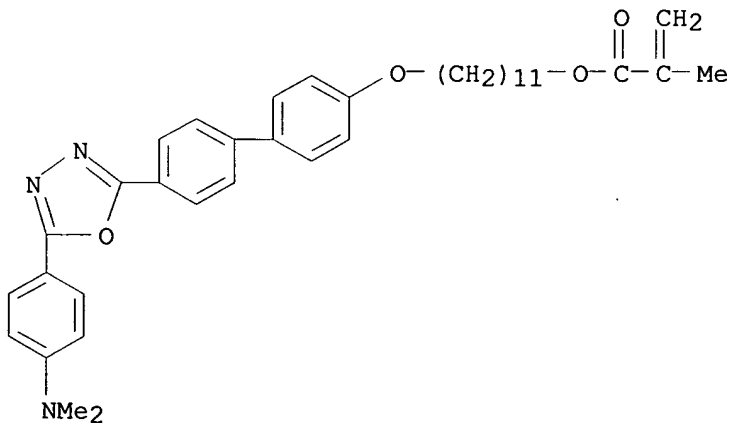
RN 521971-81-3 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, 11-[[[4'-[5-[4-(diphenylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]undecyl ester (9CI) (CA INDEX NAME)



RN 540473-59-4 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, 2-[[[4'-[5-[4-(dimethylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]ethyl ester (9CI) (CA INDEX NAME)



RN 540473-60-7 HCAPLUS  
 CN 2-Propenoic acid, 2-methyl-, 11-[[[4'-[5-[4-(dimethylamino)phenyl]-1,3,4-oxadiazol-2-yl][1,1'-biphenyl]-4-yl]oxy]undecyl ester (9CI) (CA INDEX NAME)



RE.CNT 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 11 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2003:134482 HCAPLUS  
 DN 138:354349  
 TI Synthesis and properties of new ultraviolet-blue-emissive fluorene-based aromatic polyoxadiazoles with confinement moieties  
 AU Yang, Nam Choul; Park, Young Hoon; Suh, Dong Hack  
 CS School of Chemical Engineering, College of Engineering, Hanyang University, Seoul, 133-791, S. Korea  
 SO Journal of Polymer Science, Part A: Polymer Chemistry (2003), 41(5), 674-683  
 CODEN: JPACEC; ISSN: 0887-624X  
 PB John Wiley & Sons, Inc.  
 DT Journal  
 LA English  
 AB Three families of fluorene-oxadiazole-based polymers with confinement

moieties have successfully been prepared by the two-step method for polyoxadiazole synthesis. These polymers show good solubility in common organic

solvents, high thermal stability, and strong violet and blue **photoluminescence** in solution and as films, resp. Their low-lying HOMO/LUMO energy levels originate from the electron deficiency of an oxadiazole moiety, and this suggests that they may be useful for blue-emitting and electron-transport/hole-blocking layers in **electroluminescent devices**.

CC 35-5 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 36

ST fluorene contg polyoxadiazole synthesis soly thermal electrochem property **photoluminescence**

IT UV absorption

(UV-visible; synthesis and properties of new UV-blue-emissive fluorene-based aromatic polyoxadiazoles with confinement moieties)

IT Polyhydrazides

Polyoxadiazoles

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (fluorine-containing; synthesis and properties of new UV-blue-emissive fluorene-based aromatic polyoxadiazoles with confinement moieties)

IT Band gap

(optical; synthesis and properties of new UV-blue-emissive fluorene-based aromatic polyoxadiazoles with confinement moieties)

IT Polyhydrazides

Polyoxadiazoles

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (polyether-; synthesis and properties of new UV-blue-emissive fluorene-based aromatic polyoxadiazoles with confinement moieties)

IT Fluoropolymers, preparation

Polyethers, preparation

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (polyhydrazide-; synthesis and properties of new UV-blue-emissive fluorene-based aromatic polyoxadiazoles with confinement moieties)

IT Fluoropolymers, preparation

Polyethers, preparation

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (polyoxadiazole-; synthesis and properties of new UV-blue-emissive fluorene-based aromatic polyoxadiazoles with confinement moieties)

IT Cyclic voltammetry

Glass transition temperature

HOMO (molecular orbital)

LUMO (molecular orbital)

**Luminescence**

Molecular weight

Oxidation potential

Polydispersity

Polymer chains

Solubility

Thermal stability

(synthesis and properties of new UV-blue-emissive fluorene-based aromatic polyoxadiazoles with confinement moieties)

IT 7803-57-8, Hydrazine monohydrate

RL: RCT (Reactant); RACT (Reactant or reagent) (in reaction with bisbenzoic acid derivs.)

IT 16433-88-8, 2,7-Dibromofluorene

RL: RCT (Reactant); RACT (Reactant or reagent) (in reaction with bromododecane)

IT 544-92-3, Copper cyanide

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (in reaction with dibromodidodecylfluorene)

IT 143-15-7, 1-Bromododecane  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (in reaction with dibromofluorene)

IT 99-76-3, 4-Hydroxybenzoic acid methyl ester  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (in reaction with dibromohexane)

IT 1171-47-7 2215-89-6, 4,4'-Oxybisbenzoic acid  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (in reaction with hydrazine)

IT 629-03-8, 1,6-Dibromohexane  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (in reaction with hydroxybenzoic acid Me ester)

IT 388602-19-5P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (monomer intermediate; preparation of, and in hydrolysis reaction)

IT 286438-45-7P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (monomer intermediate; preparation of, and in reaction with copper cyanide)

IT 121595-36-6P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (monomer intermediate; preparation of, and in reaction with hydrazine)

IT 388602-20-8P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (monomer; preparation of, and in polymerization with dihydrazides)

IT 13092-49-4P 32636-84-3P 521061-84-7P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (monomer; preparation of, and in polymerization with fluorenedicarboxylic  
 acid  
 derivative)

IT 521061-85-8P 521061-86-9P 521061-87-0P 521061-88-1P 521061-89-2P  
 521061-90-5P 521061-91-6P 521061-92-7P **521061-93-8P**  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (synthesis and properties of new UV-blue-emissive fluorene-based aromatic  
 polyoxadiazoles with confinement moieties)

IT **521061-93-8P**  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (synthesis and properties of new UV-blue-emissive fluorene-based aromatic  
 polyoxadiazoles with confinement moieties)

RN 521061-93-8 HCAPLUS

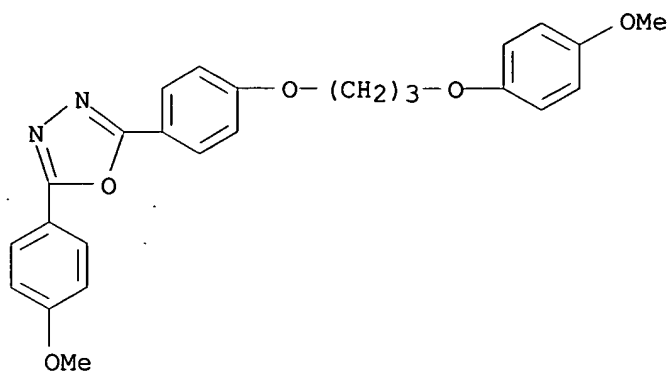
CN Poly[1,3,4-oxadiazole-2,5-diyl(9,9-didodecyl-9H-fluorene-2,7-diyl)-1,3,4-  
 oxadiazole-2,5-diyl-1,4-phenyleneoxy-1,6-hexanediyl-1,4-phenylene]  
 (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

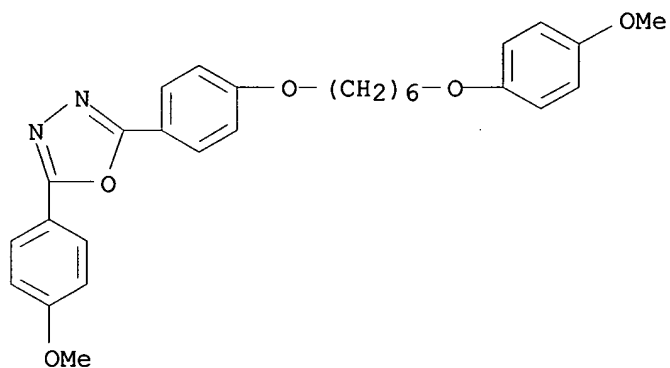
\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*  
 RE.CNT 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 12 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2003:73086 HCAPLUS  
 DN 138:262119  
 TI Electrical and optical properties of PPV monomers containing side chain  
 OXD  
 AU Zhang, Ming-long; Xia, Yi-ben; Li, Min; Wang, Lin-jun  
 CS Department of Materials Science and Engineering, Shanghai University,  
 Shanghai, 201800, Peop. Rep. China  
 SO Gongneng Cailiao Yu Qijian Xuebao (2002), 8(4), 351-354  
 CODEN: GCQXFW; ISSN: 1007-4252  
 PB Gongneng Cailiao Yu Qijian Xuebao Bianjibu  
 DT Journal  
 LA Chinese  
 AB A series of polyphenylene vinylene (PPV) ramification containing side chain  
 OXD(En) were synthesized from functional assemblies. Elec. and optical  
 properties of these small compds. were determined by DSC, polarized optical  
 microscope (POM), UV absorption spectrum, electrochem. measurement and  
 manufacturing multilayers **device**. These small compds. behave as  
**liquid crystal**, possess electron and hole transmission,  
**luminescence** and other attractive properties. It is a kind of  
 attractive organic **electroluminescent** compds. The multi-layers  
**EL device** with R - OXD (En) layer begin to emit light at  
 <3 V and a luminance level of 1000 cd m<sup>-2</sup> can be obtained at 7 V.  
 CC 73-4 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)  
 ST polyphenylene vinylene monomer oxadiazole side chain elec optical property  
 IT **Liquid crystals**  
 (behavior of polyphenylene vinylene monomers containing oxadiazole side  
 chain)  
 IT Electric current-potential relationship  
**Electroluminescent devices**  
**Luminescence**  
**Luminescence, electroluminescence**  
 Thermal decomposition  
 UV and visible spectra  
 (of polyphenylene vinylene monomers containing oxadiazole side chain)  
 IT Microscopy  
 (polarization; of polyphenylene vinylene monomers containing oxadiazole  
 side chain)  
 IT 503073-07-2 503073-08-3  
 RL: PRP (Properties)  
 (elec. and optical properties of)  
 IT 503073-07-2 503073-08-3  
 RL: PRP (Properties)  
 (elec. and optical properties of)  
 RN 503073-07-2 HCAPLUS  
 CN 1,3,4-Oxadiazole, 2-[4-[3-(4-methoxyphenoxy)propoxy]phenyl]-5-(4-  
 methoxyphenyl)- (9CI) (CA INDEX NAME)

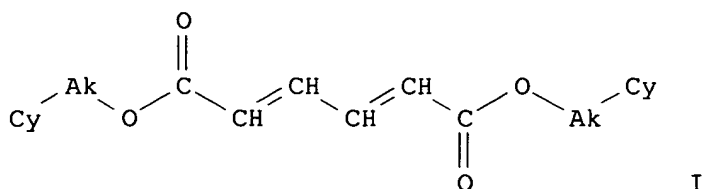


RN 503073-08-3 HCAPLUS  
 CN 1,3,4-Oxadiazole, 2-[4-[[6-(4-methoxyphenoxy)hexyl]oxy]phenyl]-5-(4-methoxyphenyl)- (9CI) (CA INDEX NAME)



L71 ANSWER 13 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2002:689661 HCAPLUS  
 DN 137:239449  
 TI **Luminescent** material and **luminescent** component using  
 novel compound and its polymer  
 IN Araki, Katsumi  
 PA Fuji Photo Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 13 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

|    | PATENT NO.        | KIND | DATE     | APPLICATION NO.                  | DATE                   |
|----|-------------------|------|----------|----------------------------------|------------------------|
| PI | JP 2002255934     | A2   | 20020911 | JP 2001-155912<br>JP 2000-392898 | 20010524<br>A 20001225 |
| OS | MARPAT 137:239449 |      |          |                                  |                        |
| GI |                   |      |          |                                  |                        |



AB The invention refers to a monomer I [Ak = alkylene; Cy = aromatic ring containing

more than 6 atoms and at least one heteroatom], suitable for use as a **luminescent material in electroluminescent devices**, wherein the monomer undergoes topochem. polymerization

IC ICM C07D209-86

ICS C07D271-10; C07D471-04; C08F036-04; H05B033-14; H05B033-22

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescent device luminescent material** topochem polymn

IT **Electroluminescent devices**

**Luminescent substances**

Topochemical reaction

(**luminescent material and luminescent component**

using novel compound and polymer)

IT Polymerization

(topochem.; **luminescent material and luminescent**

component using novel compound and polymer)

IT 65461-62-3P 457893-77-5P **457893-79-7P**

RL: **DEV (Device component use)**; SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(**luminescent material and luminescent component**

using novel compound and polymer)

IT 79-37-8, Oxalyl chloride 1119-72-8, cis,Cis-Muconic acid 1484-14-6,

N-Hydroxyethyl carbazole 180599-03-5

RL: RCT (Reactant); RACT (Reactant or reagent)

(**luminescent material and luminescent component**

using novel compound and polymer)

IT **457893-79-7P**

RL: **DEV (Device component use)**; SPN (Synthetic preparation);

PREP (Preparation); USES (Uses)

(**luminescent material and luminescent component**

using novel compound and polymer)

RN 457893-79-7 HCAPLUS

CN 2,4-Hexadienedioic acid, bis[[4-[5-[4-(1,1-dimethylethyl)phenyl]-1,3,4-oxadiazol-2-yl]phenyl]methyl] ester, (2Z,4Z)-, homopolymer (9CI) (CA INDEX NAME)

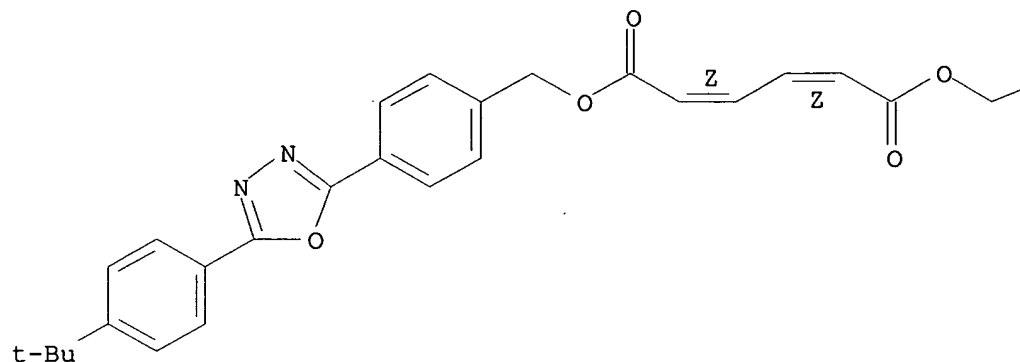
CM 1

CRN 457893-78-6

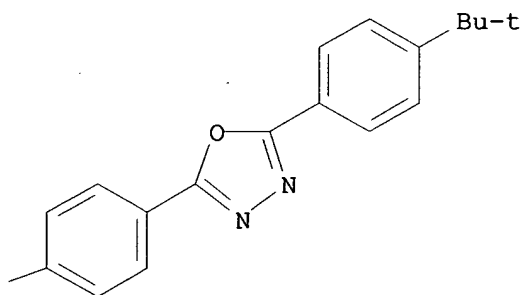
CMF C44 H42 N4 O6

Double bond geometry as shown.

PAGE 1-A



PAGE 1-B



L71 ANSWER 14 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:33246 HCAPLUS

DN 136:279773

TI Synthesis and **electroluminescent** studies of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain

AU Zheng, Min; Ding, Liming; Gurel, E. Elif; Karasz, Frank E.

CS Department of Polymer Science & Engineering, Conte Center for Polymer Research, University of Massachusetts, Amherst, MA, 01003, USA

SO Journal of Polymer Science, Part A: Polymer Chemistry (2001), Volume Date  
2002, 40(2), 235-241

CODEN: JPACEC; ISSN: 0887-624X

PB John Wiley & Sons, Inc.

DT Journal

LA English

AB Two statistical copolymers III and IV combining features of the two reference polymers I and II were synthesized by a Wittig reaction with the objective



of raising the electron-transport properties and fluorescence quantum yields relative to the alternating block copolymers I and II. The **electroluminescent** properties of single-layer LEDs using these copolymers were studied. External quantum efficiencies of 0.035 and 0.11% were obtained from single-layer **devices** on the basis of III and IV, resp., which are higher than those of similar **devices** using I and II. Two single-layer LEDs using a blend of I and II (4:1 and 1:1 wt/wt) corresponding to the compns. of copolymers III and IV, resp., were also fabricated for comparison. Results indicated that the covalent incorporation of oxadiazole is effective in improving the efficiency of LEDs and that the molar content of oxadiazole plays an important role in the performance of the **devices**.

CC 35-5 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 73

ST **electroluminescence photoluminescence** phenylene

vinylene oxadiazole ether copolymer; light emitting diode oxadiazole copolymer

IT UV absorption

(UV-visible; of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain)

IT **Electroluminescent devices**

(containing copolymers with phenylene vinylene and oxadiazole moieties in the main chain)

IT Polymer blends

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(**electroluminescent** studies of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain)

IT Brightening

Current density

**Luminescence, electroluminescence**

(of LEDs containing phenylene vinylene and oxadiazole moieties in the main chain)

IT Glass transition temperature

**Luminescence**

(of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain)

IT Polyoxadiazoles

RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(poly(arylenealkenylene)-; synthesis and **electroluminescent** studies of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain)

IT Polyoxadiazoles

RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyether-; synthesis and **electroluminescent** studies of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain)

IT Poly(arylenealkenylenes)

Polyethers, preparation

RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(polyoxadiazole-; synthesis and **electroluminescent** studies of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain)

IT Polyethers, preparation  
 RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (polyphenylenevinylene-; synthesis and **electroluminescent** studies of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain)

IT Poly(arylenealkenylenes)  
 RL: POF (Polymer in formulation); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (polyphenylenevinylenes, polyether-; synthesis and **electroluminescent** studies of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain)

IT 146284-85-7 156820-93-8 **347895-37-8 347895-40-3**  
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
 (synthesis and **electroluminescent** studies of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain)

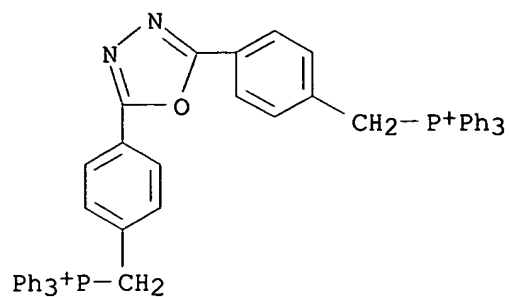
IT **405511-85-5P**  
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (synthesis and **electroluminescent** studies of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain)

IT **347895-37-8 347895-40-3**  
 RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
 (synthesis and **electroluminescent** studies of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain)

RN 347895-37-8 HCAPLUS  
 CN Phosphonium, [1,3,4-oxadiazole-2,5-diylbis(4,1-phenylenemethylene)]bis[triphenyl-, dibromide, polymer with 4,4'-[1,8-octanediylbis(oxy)]bis[3,5-dimethoxybenzaldehyde] (9CI) (CA INDEX NAME)

CM 1

CRN 221615-56-1  
 CMF C52 H42 N2 O P2 . 2 Br

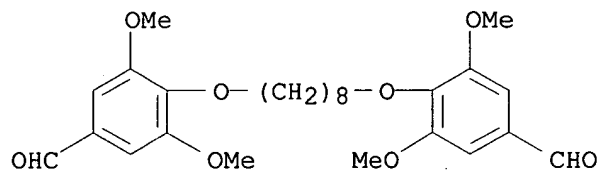


● 2  $\text{Br}^-$

CM 2

CRN 146119-99-5

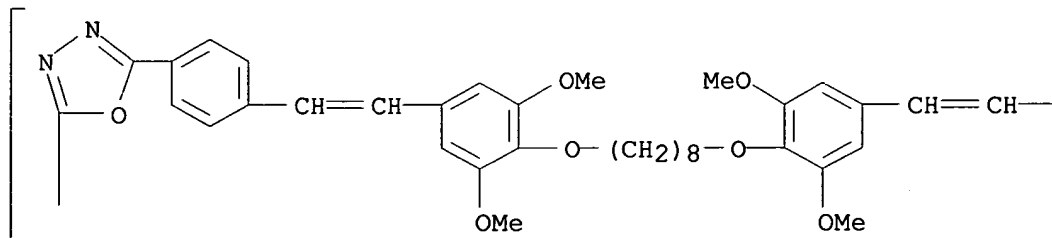
CMF C26 H34 O8



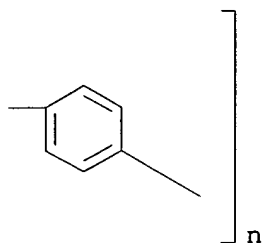
RN 347895-40-3 HCAPLUS

CN Poly[1,3,4-oxadiazole-2,5-diyl-1,4-phenylene-1,2-ethenediyl(3,5-dimethoxy-1,4-phenylene)oxy-1,8-octanedioxy(2,6-dimethoxy-1,4-phenylene)-1,2-ethenediyl-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



IT 405511-85-5P

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(synthesis and **electroluminescent** studies of blue-emitting copolymers containing phenylene vinylene and oxadiazole moieties in the main chain)

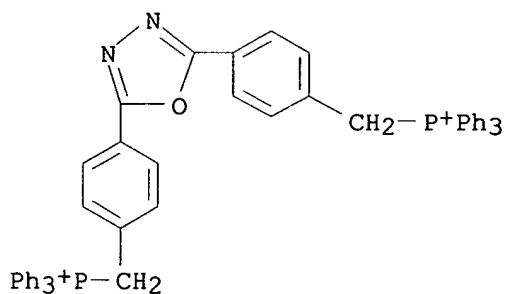
RN 405511-85-5 HCAPLUS

CN Phosphonium, [1,3,4-oxadiazole-2,5-diylbis(4,1-phenylenemethylene)]bis[triphenyl-, dibromide, polymer with 4,4'-[1,8-octanediylbis(oxy)]bis[3,5-dimethoxybenzaldehyde] and [1,4-phenylenebis(methylene)]bis[triphenylphosphonium] dichloride (9CI)  
(CA INDEX NAME)

CM 1

CRN 221615-56-1

CMF C52 H42 N2 O P2 . 2 Br

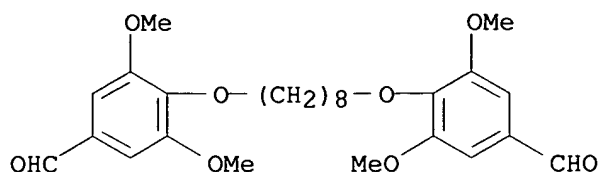


● 2 Br<sup>-</sup>

CM 2

CRN 146119-99-5

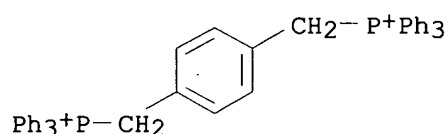
CMF C26 H34 O8



CM 3

CRN 1519-47-7

CMF C44 H38 P2 . 2 Cl



● 2 Cl<sup>-</sup>

RE.CNT 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

- L71 ANSWER 15 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2001:514538 HCAPLUS  
DN 135:279769  
TI White-light **electroluminescence** from soluble  
oxadiazole-containing phenylene vinylene ether-linkage copolymer  
AU Lee, Yuh-Zheng; Chen, Xiwen; Chen, Ming-Chih; Chen, Show-An; Hsu,  
Jui-Hung; Fann, Wunshain  
CS Chemical Engineering Department, National Tsing Hua University, Hsinchu,  
30043, Taiwan  
SO Applied Physics Letters (2001), 79(3), 308-310  
CODEN: APPLAB; ISSN: 0003-6951  
PB American Institute of Physics  
DT Journal  
LA English  
AB The authors report a promising oxadiazole-containing phenylene vinylene  
ether-linkage copolymer, which can emit nearly white light from a  
single-layer light-emitting diode. The emission spectrum is composed of a  
red component originating from the new excited dimer in addition to the  
blue-green component from an individual luminophor and excimer. This  
excited dimer is formed under a strong elec. field inside the diode and  
cannot be produced by photoexcitation, which is different from the excimer  
or exciplex that is often found both in **photoluminescence** and  
**electroluminescence**, and it is termed the electromer.  
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related  
Properties)  
Section cross-reference(s): 36, 76  
ST white light **electroluminescence** copolymer oxadiazole phenylene  
vinylene  
IT Annealing

(effect; white-light **electroluminescence** from soluble oxadiazole-containing phenylene vinylene ether-linkage copolymer)

IT **Electroluminescent devices**  
**Luminescence**  
**Luminescence, electroluminescence**  
 (white-light **electroluminescence** from soluble oxadiazole-containing phenylene vinylene ether-linkage copolymer)

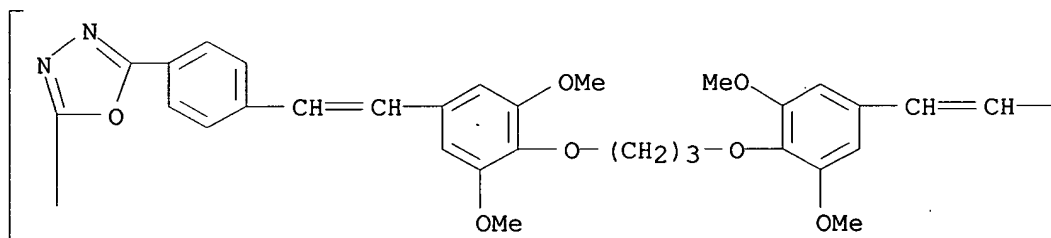
IT 7429-90-5, Aluminum, uses 50926-11-9, Indium tin oxide  
 RL: **DEV (Device component use)**; **USES (Uses)**  
 (white-light **electroluminescence** from soluble oxadiazole-containing phenylene vinylene ether-linkage copolymer)

IT **364058-56-0 364058-57-1**  
 RL: **DEV (Device component use)**; **PEP (Physical, engineering or chemical process)**; **PRP (Properties)**; **PROC (Process)**; **USES (Uses)**  
 (white-light **electroluminescence** from soluble oxadiazole-containing phenylene vinylene ether-linkage copolymer)

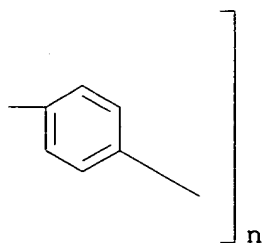
IT **364058-56-0 364058-57-1**  
 RL: **DEV (Device component use)**; **PEP (Physical, engineering or chemical process)**; **PRP (Properties)**; **PROC (Process)**; **USES (Uses)**  
 (white-light **electroluminescence** from soluble oxadiazole-containing phenylene vinylene ether-linkage copolymer)

RN 364058-56-0 HCAPLUS  
 CN Poly[1,3,4-oxadiazole-2,5-diyl-1,4-phenylene-1,2-ethenediyl(3,5-dimethoxy-1,4-phenylene)oxy-1,3-propanediyl(2,6-dimethoxy-1,4-phenylene)-1,2-ethenediyl-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A

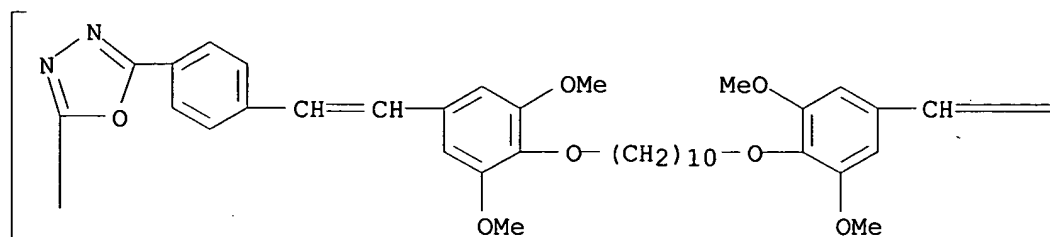


PAGE 1-B

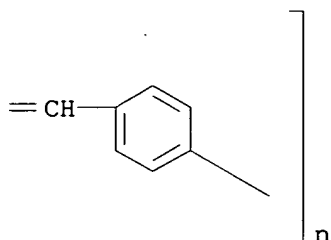


RN 364058-57-1 HCAPLUS  
 CN Poly[1,3,4-oxadiazole-2,5-diyl-1,4-phenylene-1,2-ethenediyl(3,5-dimethoxy-1,4-phenylene)oxy-1,10-decanediyl(2,6-dimethoxy-1,4-phenylene)-1,2-ethenediyl-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 16 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2001:320433 HCAPLUS  
DN 135:77439  
TI Oxadiazole Containing Conjugated-Nonconjugated Blue and Blue-Green Light Emitting Copolymers  
AU Zheng, Min; Ding, Liming; Guerel, E. Elif; Lahti, Paul M.; Karasz, Frank E.  
CS Department of Polymer Science & Engineering and Department of Chemistry, University of Massachusetts, Amherst, MA, 01003, USA  
SO Macromolecules (2001), 34(12), 4124-4129  
CODEN: MAMOBX; ISSN: 0024-9297  
PB American Chemical Society  
DT Journal  
LA English  
AB A series of segmented copolymers containing oxadiazole groups in the conjugated main chain have been synthesized with the objective of raising the electron transport ability. The present copolymers consist of alternating blocks of rigid chromophores containing oxadiazole units together with flexible spacer segments. The effects of chromophore substituents on the optical properties of the copolymers were investigated. Strong solvatochromic effects were observed, indicating intramol. charge transfer in the excited states. The copolymers not only were used as blue-green **electroluminescent** materials but also were effective as electron transport/hole blocking layers in polymer light emitting diode architectures as a result of the introduction of electron transporting unit oxadiazole. The quantum efficiency of a single-layer **device** using PPV (polyphenylenevinylene) was greatly enhanced with the use of a thin film of the oxadiazole copolymer serving as an ETL (electron transporting layer). At 6.8 V, a brightness of 2400 cd/m<sup>2</sup> was achieved with an external quantum efficiency of 0.094%.

- CC 36-5 (Physical Properties of Synthetic High Polymers)  
Section cross-reference(s): 35, 73
- ST oxadiazole chromophore conjugated copolymer optical property; charge transfer oxadiazole chromophore conjugated copolymer
- IT Phosphors  
(**electroluminescent**; preparation and optical properties of oxadiazole containing conjugated-nonconjugated blue and blue-green light emitting copolymers)
- IT Solvent effect  
(on optical properties of oxadiazole containing conjugated-nonconjugated blue and blue-green light emitting copolymers)
- IT Polyoxadiazoles  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(poly(arylenealkenylene)-, polyether-; preparation and optical properties of oxadiazole containing conjugated-nonconjugated blue and blue-green light emitting copolymers)
- IT Polyoxadiazoles  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(polyether-, poly(arylenealkenylene)-; preparation and optical properties of oxadiazole containing conjugated-nonconjugated blue and blue-green light emitting copolymers)
- IT Polyethers, properties  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(polyoxadiazole-, poly(arylenealkenylene)-; preparation and optical properties of oxadiazole containing conjugated-nonconjugated blue and blue-green light emitting copolymers)
- IT Poly(arylenealkenylenes)  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(polyoxadiazole-, polyether-; preparation and optical properties of oxadiazole containing conjugated-nonconjugated blue and blue-green light emitting copolymers)
- IT Brightening  
Fluorescence  
Glass transition temperature  
**Luminescence**  
**Luminescence, electroluminescence**  
Molecular weight  
Optical properties  
Photoinduced electron transfer  
Polymerization  
(preparation and optical properties of oxadiazole containing conjugated-nonconjugated blue and blue-green light emitting copolymers)
- IT 221615-56-1P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(intermediate; preparation and optical properties of oxadiazole containing conjugated-nonconjugated blue and blue-green light emitting copolymers)
- IT 297155-61-4P 297155-64-7P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(monomer; preparation and optical properties of oxadiazole containing conjugated-nonconjugated blue and blue-green light emitting copolymers)
- IT **347895-37-8P 347895-38-9P 347895-39-0P**  
**347895-40-3P 347895-42-5P 347895-44-7P**  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation and optical properties of oxadiazole containing conjugated-nonconjugated blue and blue-green light emitting copolymers)
- IT 67-66-3, Chloroform, uses 75-05-8, Acetonitrile, uses 108-88-3, Toluene, uses 110-82-7, Cyclohexane, uses

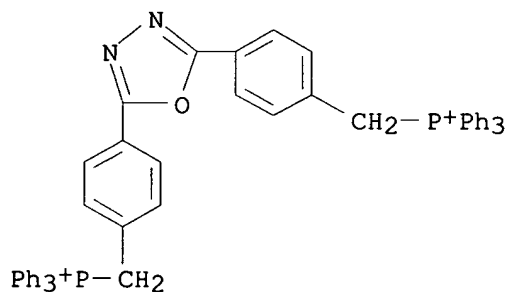


RL: NUU (Other use, unclassified); USES (Uses)  
 (solvent effect on optical properties of oxadiazole containing  
 conjugated-nonconjugated blue and blue-green light emitting copolymers)  
 IT 121-32-4, 3-Ethoxy-4-hydroxybenzaldehyde 2233-18-3, 3,5-Dimethyl-4-  
 hydroxybenzaldehyde 4549-32-0, 1,8-Dibromooctane 58370-39-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (starting material; preparation and optical properties of oxadiazole  
 containing  
 conjugated-nonconjugated blue and blue-green light emitting copolymers)  
 IT 347895-37-8P 347895-38-9P 347895-39-0P  
 347895-40-3P 347895-42-5P 347895-44-7P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation and optical properties of oxadiazole containing  
 conjugated-nonconjugated blue and blue-green light emitting copolymers)  
 RN 347895-37-8 HCAPLUS  
 CN Phosphonium, [1,3,4-oxadiazole-2,5-diylbis(4,1-  
 phenylenemethylene)]bis[triphenyl-, dibromide, polymer with  
 4,4'-[1,8-octanediylbis(oxy)]bis[3,5-dimethoxybenzaldehyde] (9CI) (CA  
 INDEX NAME)

CM 1

CRN 221615-56-1

CMF C52 H42 N2 O P2 . 2 Br

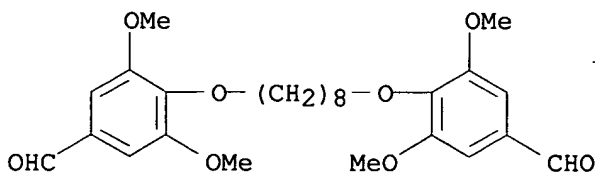


● 2 Br<sup>-</sup>

CM 2

CRN 146119-99-5

CMF C26 H34 O8



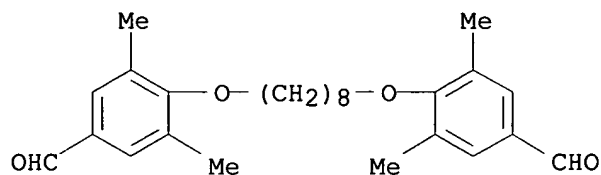
RN 347895-38-9 HCAPLUS

CN Phosphonium, [1,3,4-oxadiazole-2,5-diylbis(4,1-phenylenemethylene)]bis[triphenyl-, dibromide, polymer with 4,4'-[1,8-octanediylbis(oxy)]bis[3,5-dimethylbenzaldehyde] (9CI) (CA INDEX NAME)

CM 1

CRN 297155-61-4

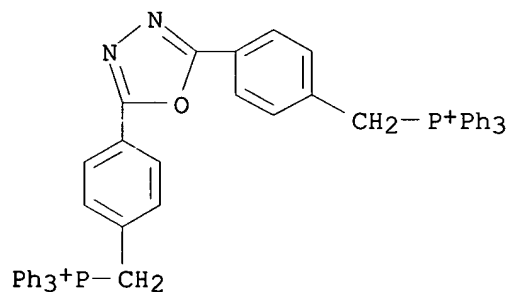
CMF C26 H34 O4



CM 2

CRN 221615-56-1

CMF C52 H42 N2 O P2 . 2 Br



● 2 Br<sup>-</sup>

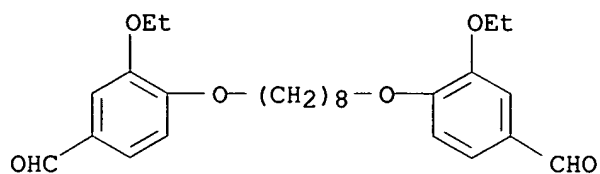
RN 347895-39-0 HCAPLUS

CN Phosphonium, [1,3,4-oxadiazole-2,5-diylbis(4,1-phenylenemethylene)]bis[triphenyl-, dibromide, polymer with 4,4'-[1,8-octanediylbis(oxy)]bis[3-ethoxybenzaldehyde] (9CI) (CA INDEX NAME)

CM 1

CRN 297155-64-7

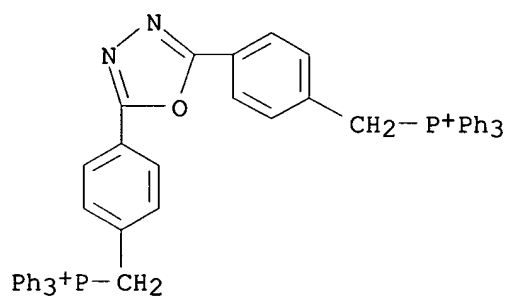
CMF C26 H34 O6



CM 2

CRN 221615-56-1

CMF C52 H42 N2 O P2 . 2 Br

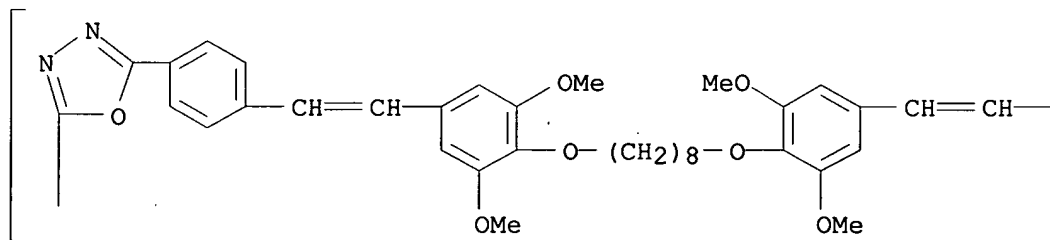


● 2 Br<sup>-</sup>

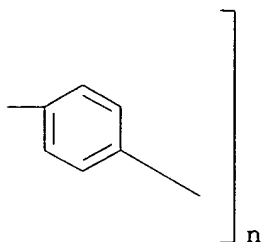
RN 347895-40-3 HCAPLUS

CN Poly[1,3,4-oxadiazole-2,5-diyl-1,4-phenylene-1,2-ethenediyl(3,5-dimethoxy-1,4-phenylene)oxy-1,8-octanediyl]oxy(2,6-dimethoxy-1,4-phenylene)-1,2-ethenediyl-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A

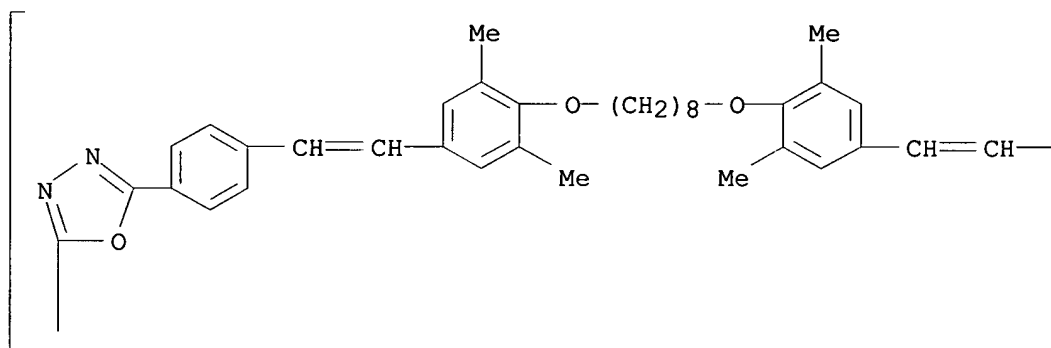


PAGE 1-B

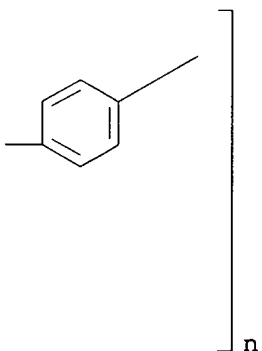


RN 347895-42-5 HCAPLUS  
 CN Poly[1,3,4-oxadiazole-2,5-diyl-1,4-phenylene-1,2-ethenediyl(3,5-dimethyl-1,4-phenylene)oxy-1,8-octanediyl]oxy(2,6-dimethyl-1,4-phenylene)-1,2-ethenediyl-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A

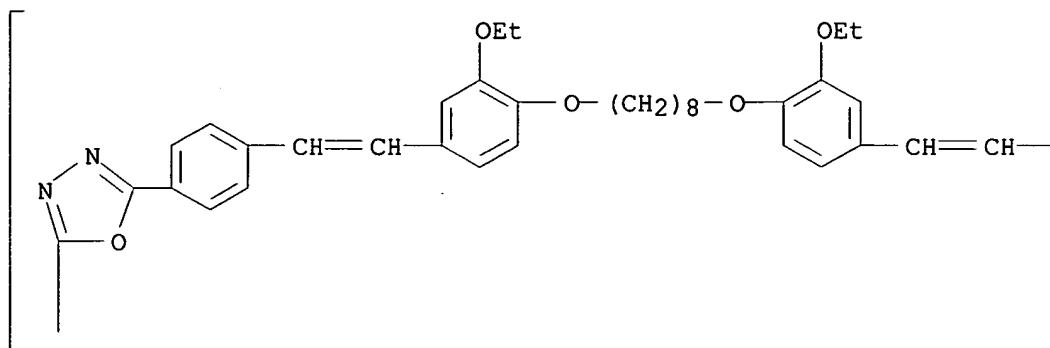


PAGE 1-B

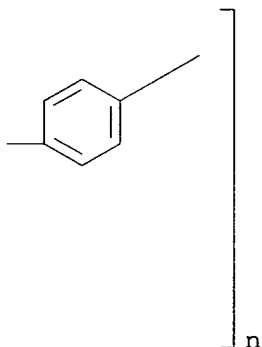


RN 347895-44-7 HCAPLUS  
 CN Poly[1,3,4-oxadiazole-2,5-diyl-1,4-phenylene-1,2-ethenediyl(3-ethoxy-1,4-phenylene)oxy-1,8-octanediyl]oxy(2-ethoxy-1,4-phenylene)-1,2-ethenediyl-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 17 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2001:238145 HCAPLUS  
DN 134:245020  
TI Preparation and application of **electroluminescent** polymers  
containing multiple functional groups  
IN Zhu, Weihong; Tian, He; Hu, Meng  
PA Huadong Science and Engineering Univ., Peop. Rep. China  
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 14 pp.  
CODEN: CNXXEV  
DT Patent  
LA Chinese

FAN.CNT 1

|    | PATENT NO. | KIND | DATE     | APPLICATION NO. | DATE     |
|----|------------|------|----------|-----------------|----------|
|    | -----      | ---  | ----     | -----           | -----    |
| PI | CN 1266877 | A    | 20000920 | CN 2000-111494  | 20000125 |
|    |            |      |          | CN 2000-111494  | 20000125 |
| GI |            |      |          |                 |          |

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB **Electroluminescent** polymers prepared by connecting main chain with electron transporting functional group, hole transporting functional group and luminous unit are described by the general formula I, II, and III (B = IV; B' = V; C = VI; C' = VII; and D = O(CH<sub>2</sub>)<sub>n</sub>OCO(CH<sub>2</sub>)<sub>m</sub>CO; x = 0.10-0.30; y = 0.10-0.30; z = 0.40-0.80; p = 30-100; m, n = 2, 4, 6, and 8 and R = alkyl groups). The polymers can be used in **electroluminescent devices**.

IC ICM C09K011-06

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 38, 76

ST **electroluminescent** polymer

IT **Electroluminescent devices**  
(**electroluminescent** polymers containing multiple functional groups)

IT Phosphors  
(**electroluminescent; electroluminescent** polymers containing multiple functional groups)

IT **287177-89-3P** 330482-48-9P  
RL: **DEV (Device component use)**; SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(**electroluminescent** polymers containing multiple functional groups)

IT 81-86-7 86-74-8, 9H-Carbazole 111-83-1 122-04-3 141-43-5,  
reactions 636-97-5  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(**electroluminescent** polymers containing multiple functional groups)

IT 1044-49-1P 2425-95-8P 4041-19-4P 4402-22-6P 56613-64-0P  
330482-49-0P 330482-50-3P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(**electroluminescent** polymers containing multiple functional groups)

IT **330482-51-4P**  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(**electroluminescent** polymers containing multiple functional groups)

IT **287177-89-3P**  
RL: **DEV (Device component use)**; SPN (Synthetic preparation);  
PREP (Preparation); USES (Uses)  
(**electroluminescent** polymers containing multiple functional groups)

RN 287177-89-3 HCAPLUS

CN Decanedioyl dichloride, polymer with 1,4-butanediol, 2-(2-hydroxyethyl)-6-[(2-hydroxyethyl)amino]-1H-benz[de]isoquinoline-1,3(2H)-dione and 4,4'-(1,3,4-oxadiazole-2,5-diyl)bis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

CRN 56613-64-0

CMF C16 H16 N2 O4

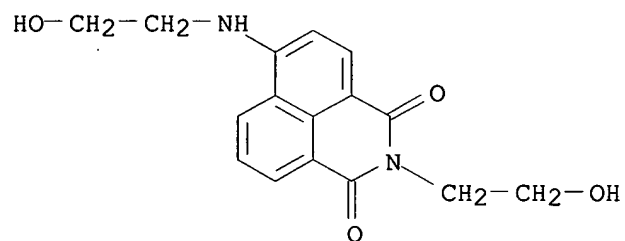


2-(2-hydroxyethyl)-6-[(2-hydroxyethyl)amino]-1H-benz[de]isoquinoline-1,3(2H)-dione and 4,4'-(1,3,4-oxadiazole-2,5-diyl)bis[benzenamine], block (9CI) (CA INDEX NAME)

CM 1

CRN 56613-64-0

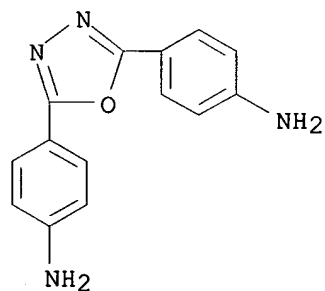
CMF C16 H16 N2 O4



CM 2

CRN 2425-95-8

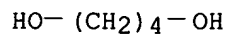
CMF C14 H12 N4 O



CM 3

CRN 110-63-4

CMF C4 H10 O2

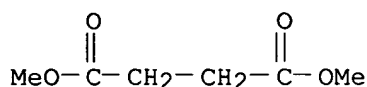


CM 4

CRN 106-65-0

CMF C6 H10 O4





- L71 ANSWER 18 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2001:221079 HCAPLUS  
 DN 135:20300  
 TI Synthesis of **electroluminescent** organic/inorganic polymer nanocomposites  
 AU Farmer, Steven C.; Patten, Timothy E.  
 CS Department of Chemistry, University of California at Davis, Davis, CA, 95616-5295, USA  
 SO Polymer Preprints (American Chemical Society, Division of Polymer Chemistry) (2001), 42(1), 578-579  
 CODEN: ACPPAY; ISSN: 0032-3934  
 PB American Chemical Society, Division of Polymer Chemistry  
 DT Journal; (computer optical disk)  
 LA English  
 AB A method was developed for grafting polymer chains from the surface of 53 nm CdS/SiO<sub>2</sub> core/shell nanospheres using atom transfer radical polymerization (ATRP). The use of silica encapsulated CdS allows for particularly robust films, because silica protects the CdS quantum dots against photodegrdn. The monomers used are hole conducting 2-(9-carbazolyl)ethyl methacrylate (CzEMA), Me methacrylate (MMA), and electron conducting 2-[4'-[(methylmethacrylethoxy)carbonyl]biphenyl-4-yl]-5-(4-tert-butylphenyl)-1,3,4-oxadiazole (MMPBD). First the CdS/SiO<sub>2</sub> nanospheres were synthesized from cadmium nitrate in ammonium sulfide microemulsion; upon formation of CdS quantum dots, NH<sub>4</sub>OH and TEOS were added to form the silica coating. The silica surface was modified with the ATRP initiator, 3-(dimethylethoxysilyl)propyl-2-bromopropionate, (BDES). The modified nanospheres were then used in polymerization of MMA, CzEMA, and MMPBD. The polymer composite nanoparticles were easily dispersed in THF and could be cast into transparent films. Because the grafted polymer chain contains hole and electron conductive moieties these nanocomposites offer some interesting possibilities for the synthesis of a one layer **electroluminescent devices**.  
 CC 37-5 (Plastics Manufacture and Processing)  
 Section cross-reference(s): 73, 76  
 ST cadmium sulfide silica nanosphere grafting acrylic polymer; **electroluminescent** acrylic polymer cadmium sulfide silica nanosphere; quantum dot conducting polymer hybrid composite nanosphere  
 IT Polymerization  
 (atom transfer, radical; preparation of **electroluminescent** hybrid CdS/silica/biphenyloxadiazole-carbazolyl methacrylate polymer nanocomposites by ATRP on initiator-functionalized nanosphere surface)  
 IT Conducting polymers  
 (biphenyloxadiazole-carbazolyl methacrylate; preparation of **electroluminescent** hybrid CdS/silica/biphenyloxadiazole-carbazolyl methacrylate polymer nanocomposites by ATRP on initiator-functionalized nanosphere surface)  
 IT Hybrid organic-inorganic materials  
 Nanocomposites  
 Transparent films  
 (preparation of **electroluminescent** hybrid CdS/silica/biphenyloxadiazole-carbazolyl methacrylate polymer nanocomposites by ATRP on initiator-functionalized nanosphere surface)

IT 265119-85-5, 3-(Dimethylethoxysilyl)propyl-2-bromopropionate  
 RL: CAT (Catalyst use); USES (Uses)  
 (ATRP initiator; preparation of **electroluminescent** hybrid  
 CdS/silica/biphenyloxadiazole-carbazolyl methacrylate polymer  
 nanocomposites by ATRP on initiator-functionalized nanosphere surface)

IT 9016-45-9, Igepal CO-520  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (emulsion medium; preparation of **electroluminescent** hybrid  
 CdS/silica/biphenyloxadiazole-carbazolyl methacrylate polymer  
 nanocomposites by ATRP on initiator-functionalized nanosphere surface)

IT 1306-23-6P, Cadmium sulfide (CdS), preparation 7631-86-9P, Silica,  
 preparation  
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN  
 (Synthetic preparation); PREP (Preparation); PROC (Process)  
 (preparation of **electroluminescent** hybrid  
 CdS/silica/biphenyloxadiazole-carbazolyl methacrylate polymer  
 nanocomposites by ATRP on initiator-functionalized nanosphere surface)

IT **342648-32-2P**  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of **electroluminescent** hybrid  
 CdS/silica/biphenyloxadiazole-carbazolyl methacrylate polymer  
 nanocomposites by ATRP on initiator-functionalized nanosphere surface)

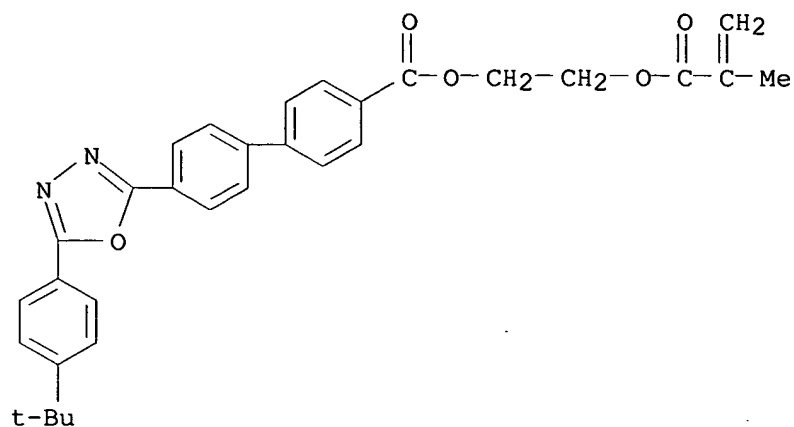
IT 78-10-4, TEOS 10325-94-7, Cadmium nitrate 12135-76-1, Ammonium sulfide  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (preparation of **electroluminescent** hybrid  
 CdS/silica/biphenyloxadiazole-carbazolyl methacrylate polymer  
 nanocomposites by ATRP on initiator-functionalized nanosphere surface)

IT **342648-32-2P**  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (preparation of **electroluminescent** hybrid  
 CdS/silica/biphenyloxadiazole-carbazolyl methacrylate polymer  
 nanocomposites by ATRP on initiator-functionalized nanosphere surface)

RN 342648-32-2 HCAPLUS  
 CN [1,1'-Biphenyl]-4-carboxylic acid, 4'-[5-[4-(1,1-dimethylethyl)phenyl]-  
 1,3,4-oxadiazol-2-yl]-, 2-[(2-methyl-1-oxo-2-propenyl)oxy]ethyl ester,  
 polymer with 2-(9H-carbazol-9-yl)ethyl 2-methyl-2-propenoate and methyl  
 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

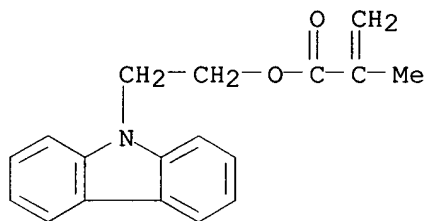
CM 1

CRN 342648-31-1  
 CMF C31 H30 N2 O5



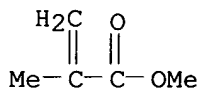
CM 2

CRN 15657-91-7  
CMF C18 H17 N O2



CM 3

CRN 80-62-6  
CMF C5 H8 O2



RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 19 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 2001:112493 HCAPLUS  
DN 134:311512  
TI Soluble **Electroluminescent** Poly(phenylene vinylene)s with  
Balanced Electron- and Hole Injections  
AU Lee, Yuh-Zheng; Chen, Xiwen; Chen, Show-An; Wei, Pei-Kuen; Fann, Wun-Shain  
CS Chemical Engineering Department, National Tsing-Hua University, Hsinchu,  
30043, Taiwan  
SO Journal of the American Chemical Society (2001), 123(10), 2296-2307

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

CODEN: JACSAT; ISSN: 0002-7863

PB American Chemical Society

DT Journal

LA English

AB Efficient soluble **electroluminescent** PPV-based copolymers bearing electron-deficient oxadiazole (OXD) moieties on side chains were designed and prepared. The OXD groups are incorporated through a long alkylene spacer to PPV backbone resulting in mol. dispersion of OXD in the film; both the side chain OXD and the main chain PPV retain their sep. electron-transport and emissive properties. The phenylene vinylene derivs. with asym. and branched substituents and a long spacer have suitable solubility that facilitates processing and fabrication; the amorphous structure is indicative of good miscibility of OXD groups with the main chains. By properly adjusting the OXD content through monomer composition, the chemical structure of the **electroluminescent** material can be tailored to provide balanced hole and electron injection to metal cathodes, such that the quantum efficiency is significantly improved and the turn-on voltage is lowered, in the case of assemblies with aluminum and calcium. A test device with calcium cathodes fabricated in open air, a maximum brightness of 15000 cd/m<sup>2</sup> at 15 V/100 nm and a maximum luminance efficiency of 2.27 cd/A were obtained, resp., about 30 times brighter and 9.4 times more efficient than those of the homopolymer, poly[2-methoxy-5-(2'-ethylhexyloxy)-p-phenylenevinylene] (MEH-PPV). The use of phys. blends of homopolymers instead of copolymers did not provide significant improvements, due to phase separation that resulted in inefficient utilization of OXD. The preparation route is suitable for fabrication of single layer PLED [polymer light emitting diodes] with high brightness, high efficiency, and low turn-on voltage.

CC 35-7 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 36, 73, 76

ST oxadiazole polyphenylenevinylene soluble **electroluminescent** copolymer prepn; electron transport emissivity oxadiazole polyphenylenevinylene conjugated polymer; metal low work function cathode oxadiazole polyphenylenevinylene emitter; light emitting diode oxadiazole polyphenylenevinylene calcium cathode

IT **Electroluminescent devices**

(PLEDs; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)

IT Polymer morphology

(amorphous; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)

IT Polymer chains

(conformation; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)

IT Polymers, properties

RL: PRP (Properties)

(conjugated; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)

IT Redox reaction

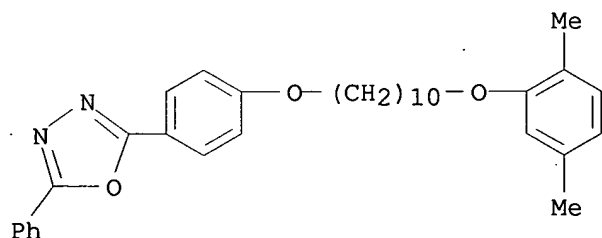
(electrochem.; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)

IT Work function

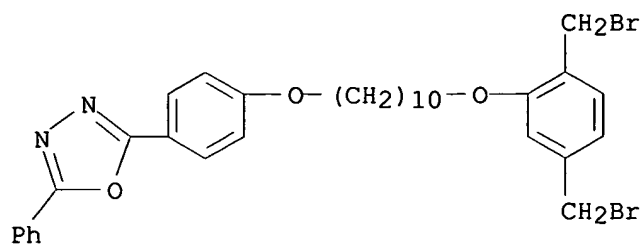
(metal; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection

- for ease of fabrication of highly efficient PLEDs)
- IT Electric current carriers  
(photocarriers; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- IT Band structure  
**Luminescence**  
Optical absorption  
Phase separation  
(preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- IT Polymer blends  
RL: PRP (Properties)  
(preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- IT Poly(arylenealkenylenes)  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- IT 10034-85-2, Hydriodic acid  
RL: NUU (Other use, unclassified); USES (Uses)  
(demethylation reagent; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- IT 335276-16-9P, 1-Decyloxy-2,5-bis(bromomethyl)benzene  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(intermediate and monomer; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- IT 842-79-5P, 2-(p-Anisyl)-5-phenyl 1,3,4-oxadiazole 6781-59-5P, 1-(p-Anisoyl)-2-benzoyl hydrazide 23133-34-8P, p-(5-Phenyl-1,3,4-oxadiazol-2-yl) phenol 130402-65-2P, 1-(10'-Bromodecanoxy)-2,5-dimethylbenzene **335276-13-6P**, 2-[10'-[p-(5''-Phenyl-1'',3'',4''-oxadiazole-2''-yl)phenoxy]decanoxy] 1,4-dimethylbenzene 335276-15-8P, 1-Decyloxy-2,5-dimethylbenzene  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(intermediate; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- IT **335276-14-7P**, 2-[10'-[p-(5''-Phenyl-1'',3'',4''-oxadiazole-2''-yl)phenoxy]decanoxy] 1,4-bis(bromomethyl)benzene 335276-17-0P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(monomer; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- IT 7440-70-2, Calcium, uses  
RL: **DEV (Device component use)**; USES (Uses)  
(preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- IT 209625-38-7P **335276-18-1P** **335276-19-2P** 335276-20-5P 335276-21-6P  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

- (preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- IT 95-87-4, 2,5-Dimethyl phenol 100-07-2, p-Anisoyl chloride 110-01-0, Tetrahydrothiophene 112-29-8, Decyl bromide 128-08-5, N-Bromosuccinimide 613-94-5, Benzoylhydrazine 4101-68-2, 1,10-Dibromodecane
- RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- IT 10025-87-3, Phosphoric trichloride
- RL: NUU (Other use, unclassified); USES (Uses)  
(reductive cyclization reagent; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- IT **335276-13-6P**, 2-[10'-[p-(5''-Phenyl-1'',3'',4''-oxadiazole-2''-yl)phenoxy]decanoxy] 1,4-dimethylbenzene
- RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(intermediate; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- RN 335276-13-6 HCAPLUS
- CN 1,3,4-Oxadiazole, 2-[4-[[10-(2,5-dimethylphenoxy)decyl]oxy]phenyl]-5-phenyl- (9CI) (CA INDEX NAME)



- IT **335276-14-7P**, 2-[10'-[p-(5''-Phenyl-1'',3'',4''-oxadiazole-2''-yl)phenoxy]decanoxy] 1,4-bis(bromomethyl)benzene
- RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(monomer; preparation of soluble **electroluminescent** poly(oxadiazole-phenylene vinylene)s with balanced carrier injection for ease of fabrication of highly efficient PLEDs)
- RN 335276-14-7 HCAPLUS
- CN 1,3,4-Oxadiazole, 2-[4-[[10-[2,5-bis(bromomethyl)phenoxy]decyl]oxy]phenyl]-5-phenyl- (9CI) (CA INDEX NAME)



IT 335276-18-1P 335276-19-2P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation of soluble **electroluminescent** poly(oxadiazole-phenylene  
vinylene)s with balanced carrier injection for ease of fabrication of  
highly efficient PLEDs)

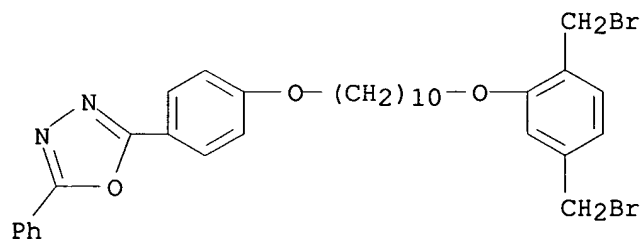
RN 335276-18-1 HCAPLUS

CN 1,3,4-Oxadiazole, 2-[4-[[10-[2,5-bis(bromomethyl)phenoxy]decyl]oxy]phenyl]-  
5-phenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 335276-14-7

CMF C32 H36 Br2 N2 O3



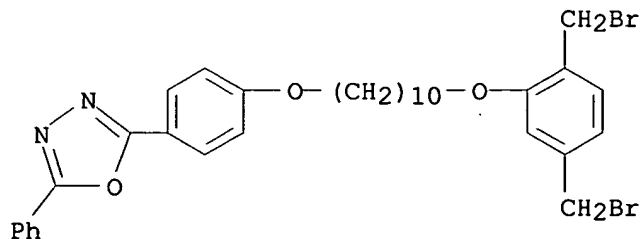
RN 335276-19-2 HCAPLUS

CN 1,3,4-Oxadiazole, 2-[4-[[10-[2,5-bis(bromomethyl)phenoxy]decyl]oxy]phenyl]-  
5-phenyl-, polymer with 1,4-bis(bromomethyl)-2-[(2-ethylhexyl)oxy]-5-  
methoxybenzene (9CI) (CA INDEX NAME)

CM 1

CRN 335276-14-7

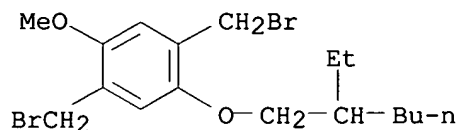
CMF C32 H36 Br2 N2 O3



CM 2

CRN 209625-37-6

CMF C17 H26 Br2 O2



RE.CNT 71 THERE ARE 71 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 20 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:638400 HCAPLUS

DN 133:244858

TI Organic **electroluminescent devices** and manufacture

IN Ishii, Satoshi; Tsuge, Hodaka; Shimada, Yoichi

PA Honda Motor Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 20 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

|    | PATENT NO.    | KIND | DATE     | APPLICATION NO. | DATE     |
|----|---------------|------|----------|-----------------|----------|
| PI | JP 2000252076 | A2   | 20000914 | JP 1999-54980   | 19990303 |
|    |               |      |          | JP 1999-54980   | 19990303 |

AB The **devices** comprise: (1) a cathode; (2) a hole transport layer; (3) an electron transporting polymer layer; (4) a phosphor layer comprising (2) or (3); and (5) an anode, where (1) and (5) are transparent; and (3) contains 1-5 side chains(s) comprising alkyl or alkoxy group(s).

IC ICM H05B033-22

ICS H05B033-10; H05B033-14; C09K011-06

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST org **electroluminescent** polymer electron transport

IT Alkyl groups

**Electroluminescent devices**

Electron transport

Glass substrates

Hole transport

(organic **electroluminescent devices** and manufacture)

IT Polymers, uses

RL: **DEV (Device component use); USES (Uses)**(organic **electroluminescent devices** and manufacture)IT 50926-11-9, ITO 197089-42-2 292056-29-2 **292624-42-1****292624-43-2 292624-44-3 292624-45-4 292624-46-5**

292624-47-6 292624-48-7 292624-49-8 292624-50-1 292624-51-2

292624-52-3 292624-53-4 292624-55-6 292624-57-8 292624-58-9

292624-60-3 292624-63-6 292624-66-9 292624-69-2 292624-72-7

RL: **DEV (Device component use); USES (Uses)**(organic **electroluminescent devices** and manufacture)

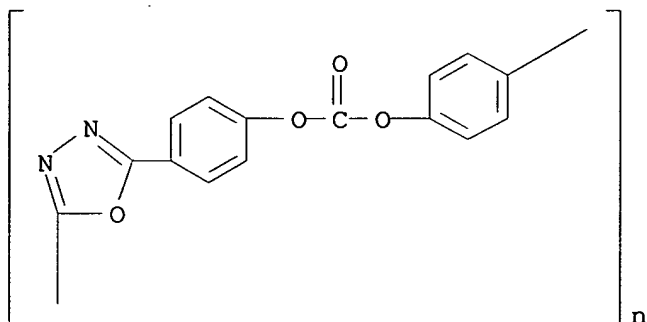


IT 292624-42-1 292624-43-2 292624-44-3

RL: DEV (Device component use); USES (Uses)  
(organic electroluminescent devices and manufacture)

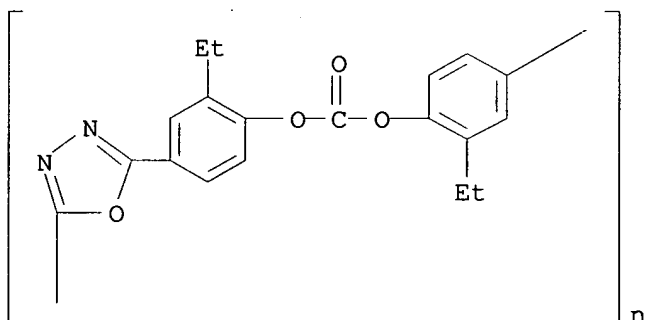
RN 292624-42-1 HCAPLUS

CN Poly[1,3,4-oxadiazole-2,5-diyl-1,4-phenyleneoxycarbonyloxy-1,4-phenylene]  
(9CI) (CA INDEX NAME)



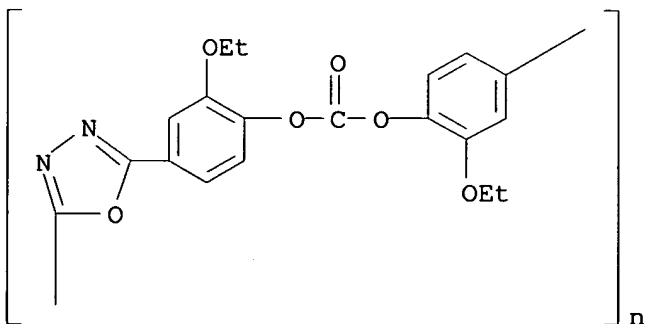
RN 292624-43-2 HCAPLUS

CN Poly[1,3,4-oxadiazole-2,5-diyl(3-ethyl-1,4-phenylene)oxycarbonyloxy(2-ethyl-1,4-phenylene)] (9CI) (CA INDEX NAME)



RN 292624-44-3 HCAPLUS

CN Poly[1,3,4-oxadiazole-2,5-diyl(3-ethoxy-1,4-phenylene)oxycarbonyloxy(2-ethoxy-1,4-phenylene)] (9CI) (CA INDEX NAME)

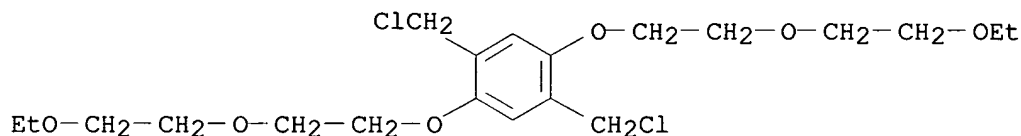


L71 ANSWER 21 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2000:638120 HCAPLUS  
 DN 133:310227  
 TI Synthesis and **electroluminescence** of oxadiazole-substituted ionic conductive poly(phenylene vinylene)  
 AU Chen, Xi-Wen; Li, Zhong-Xiao; Xie, Hong-Quan; Li, Yong-Fang  
 CS Department of Chemistry, Huazhong University of Science and Technology, Wuhan, 430074, Peop. Rep. China  
 SO Gaodeng Xuexiao Huaxue Xuebao (2000), 21(8), 1301-1304  
 CODEN: KTHPDM; ISSN: 0251-0790  
 PB Gaodeng Jiaoyu Chubanshe  
 DT Journal  
 LA Chinese  
 AB Through copolymn., a new ionic conductive hybrid conjugated polymer, polyoxyethylene side chains containing poly(phenylene vinylene) (PPV) with electron-transporting oxadiazoles V (DTEO-O-PPV), was synthesized, characterized and applied in light emitting **devices** (LED and LEC). PPV without oxadiazoles but with the same side chains as polymer V was chosen for comparison.  
 CC 35-5 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 73, 76  
 ST polyphenylenevinylene oxadiazole prepn ionic conduction **electroluminescence**  
 IT Polyoxadiazoles  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (poly(arylenealkenylene)-; synthesis and **electroluminescence** of oxadiazole-substituted ionic conductive poly(phenylene vinylene))  
 IT Poly(arylenealkenylenes)  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (polyoxadiazole-; synthesis and **electroluminescence** of oxadiazole-substituted ionic conductive poly(phenylene vinylene))  
 IT Polyoxadiazoles  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation) (polyphenylenevinylene-; synthesis and **electroluminescence** of oxadiazole-substituted ionic conductive poly(phenylene vinylene))  
 IT **Luminescence**  
**Luminescence, electroluminescence**  
 Polymerization (synthesis and **electroluminescence** of oxadiazole-substituted ionic conductive poly(phenylene vinylene))  
 IT 2491-91-0P 161470-80-0P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (intermediate; synthesis and **electroluminescence** of oxadiazole-substituted ionic conductive poly(phenylene vinylene))  
 IT 41771-35-1P  
 RL: SPN (Synthetic preparation); PREP (Preparation) (intermediate; synthesis and **electroluminescence** of oxadiazole-substituted ionic conductive poly(phenylene vinylene))  
 IT 58370-39-1P 161470-81-1P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent) (monomer; synthesis and **electroluminescence** of oxadiazole-substituted ionic conductive poly(phenylene vinylene))  
 IT 99-94-5, p-Methylbenzoic acid 111-90-0 123-31-9, 1,4-Benzenediol, reactions 7803-57-8, Hydrazine hydrate  
 RL: RCT (Reactant); RACT (Reactant or reagent)

(starting material; synthesis and **electroluminescence** of  
 oxadiazole-substituted ionic conductive poly(phenylene vinylene))  
 IT 302354-85-4P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (synthesis and **electroluminescence** of oxadiazole-substituted  
 ionic conductive poly(phenylene vinylene))  
 IT 302354-85-4P  
 RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
 (synthesis and **electroluminescence** of oxadiazole-substituted  
 ionic conductive poly(phenylene vinylene))  
 RN 302354-85-4 HCAPLUS  
 CN 1,3,4-Oxadiazole, 2,5-bis[4-(bromomethyl)phenyl]-, polymer with  
 1,4-bis(chloromethyl)-2,5-bis[2-(2-ethoxyethoxy)ethoxy]benzene (9CI) (CA  
 INDEX NAME)

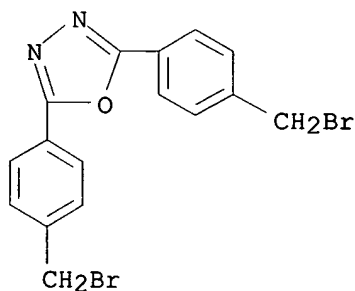
CM 1

CRN 161470-81-1  
 CMF C20 H32 Cl2 O6



CM 2

CRN 58370-39-1  
 CMF C16 H12 Br2 N2 O



L71 ANSWER 22 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 2000:451480 HCAPLUS  
 DN 133:215245  
 TI Novel **electroluminescent devices** based on  
 perylene-doped sol-gel layers  
 AU Schneider, Monika; Hagen, Jurgen; Haarer, Dietrich; Mullen, Klaus  
 CS Max-Planck-Institute for Polymer Research, Mainz, D-55128, Germany  
 SO Advanced Materials (Weinheim, Germany) (2000), 12(5), 351-354  
 CODEN: ADVMEW; ISSN: 0935-9648  
 PB Wiley-VCH Verlag GmbH  
 DT Journal

LA English

AB The preparation and **electroluminescence** of LEDs are reported on. The preparation involved embedding a fluorescent perylene dye in a hybrid sol-gel matrix formed by the hydrolysis and condensation reactions of alkoxy-silanes. Emission-voltage and current-voltage characteristics of the prepared perylene derivs. were studied.

CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 25, 28, 76

ST **electroluminescence** org polymer LED perylene dye alkoxy-silane fabrication

IT Electric current-potential relationship  
**Electroluminescent devices**  
Sol-gel processing  
(LED fabrication based on perylene-doped alkoxy-silane sol-gel layers and their optical and elec. characterization)

IT **Luminescence, electroluminescence**  
(spectra; LED fabrication based on perylene-doped alkoxy-silane sol-gel layers and their optical and elec. characterization)

IT 288-99-3, 1,3,4-Oxadiazole  
RL: **DEV (Device component use); USES (Uses)**  
(LED fabrication based on perylene-doped alkoxy-silane sol-gel layers and their optical and elec. characterization)

IT 290360-81-5P **290360-82-6P**  
RL: **DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)**  
(LED fabrication based on perylene-doped alkoxy-silane sol-gel layers and their optical and elec. characterization)

IT 108-30-5, reactions 603-34-9 613-94-5, Benzhydrazide 1679-64-7, Monomethyl terephthalate 2530-83-8  
RL: **RCT (Reactant); RACT (Reactant or reagent)**  
(LED fabrication based on perylene-doped alkoxy-silane sol-gel layers and their optical and elec. characterization)

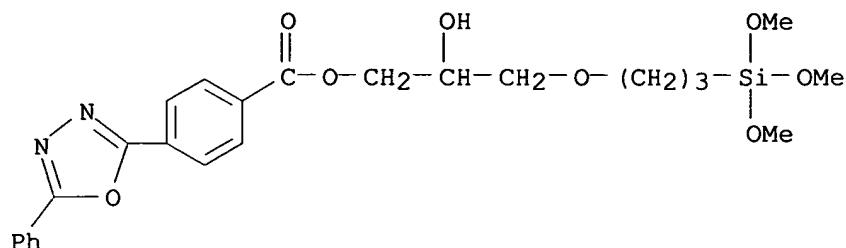
IT 85292-45-1P 290360-80-4P  
RL: **RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)**  
(LED fabrication based on perylene-doped alkoxy-silane sol-gel layers and their optical and elec. characterization)

IT 262360-45-2 290360-79-1  
RL: **DEV (Device component use); MOA (Modifier or additive use); USES (Uses)**  
(dopant; LED fabrication based on perylene-doped alkoxy-silane sol-gel layers and their optical and elec. characterization)

IT **290360-82-6P**  
RL: **DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)**  
(LED fabrication based on perylene-doped alkoxy-silane sol-gel layers and their optical and elec. characterization)

RN 290360-82-6 HCAPLUS

CN Benzoic acid, 4-(5-phenyl-1,3,4-oxadiazol-2-yl)-, 2-hydroxy-3-[3-(trimethoxysilyl)propoxy]propyl ester (9CI) (CA INDEX NAME)



RE.CNT 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 23 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 1999:487732 HCAPLUS  
DN 131:287369  
TI Oxadiazole-containing phenylene vinylene ether linkage copolymer as  
blue-green **luminescent** and electron transport material in  
polymer light-emitting diodes  
AU Lee, Yuh-Zheng; Chen, Show-An  
CS Chemical Engineering Department, National Tsing-Hua University, Hsin-chu,  
Taiwan  
SO Synthetic Metals (1999), 105(3), 185-190  
CODEN: SYMEDZ; ISSN: 0379-6779  
PB Elsevier Science S.A.  
DT Journal  
LA English  
AB We report studies on a new ether-type poly(phenylene vinylene) (PPV)  
copolymer containing oxadiazole groups in the conjugated main chain. It can  
be used as a blue-green **electroluminescent** material and as an  
electron transport/hole blocking material in polymer light-emitting diodes  
using PPV as the emitting material. The bilayer **devices** with  
aluminum cathode show a maximum brightness of about 300 cd/m<sup>2</sup> at about 21 V  
and a maximum external quantum efficiency of 0.1%. The quantum efficiency of  
the bilayer **device** is enhanced by a factor of 195 in comparison  
with that of the single layer **device** of PPV.  
CC 38-3 (Plastics Fabrication and Uses)  
Section cross-reference(s): 73  
ST oxadiazole contg polyphenylenevinylene LED; electron transport oxadiazole  
contg polyphenylenevinylene  
IT **Electroluminescent devices**  
(blue-emitting; oxadiazole-containing phenylene vinylene ether linkage  
copolymer as blue-green **luminescent** and electron transport  
material in polymer light-emitting diodes)  
IT **Electroluminescent devices**  
(green-emitting; oxadiazole-containing phenylene vinylene ether linkage  
copolymer as blue-green **luminescent** and electron transport  
material in polymer light-emitting diodes)  
IT Band structure  
Current density  
Cyclic voltammetry  
Electron transport  
**Luminescence, electroluminescence**  
UV and visible spectra  
(oxadiazole-containing phenylene vinylene ether linkage copolymer as  
blue-green **luminescent** and electron transport material in  
polymer light-emitting diodes)

IT Poly(arylenealkenylenes)  
 RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (oxadiazole-containing phenylene vinylene ether linkage copolymer as blue-green **luminescent** and electron transport material in polymer light-emitting diodes)

IT 204185-73-9P 221615-56-1P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (monomer; oxadiazole-containing phenylene vinylene ether linkage copolymer as blue-green **luminescent** and electron transport material in polymer light-emitting diodes)

IT **246246-52-6P 246246-53-7P**  
 RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (oxadiazole-containing phenylene vinylene ether linkage copolymer as blue-green **luminescent** and electron transport material in polymer light-emitting diodes)

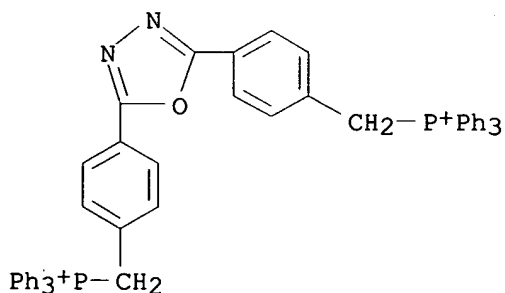
IT 603-35-0, Triphenylphosphine, reactions 58370-39-1  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (oxadiazole-containing phenylene vinylene ether linkage copolymer as blue-green **luminescent** and electron transport material in polymer light-emitting diodes)

IT **246246-52-6P 246246-53-7P**  
 RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (oxadiazole-containing phenylene vinylene ether linkage copolymer as blue-green **luminescent** and electron transport material in polymer light-emitting diodes)

RN 246246-52-6 HCAPLUS  
 CN Phosphonium, [1,3,4-oxadiazole-2,5-diylbis(4,1-phenylenemethylene)]bis[triphenyl-, dibromide, polymer with 4,4'-[1,12-dodecanediylbis(oxy)]bis[3,5-dimethoxybenzaldehyde] (9CI) (CA INDEX NAME)

CM 1

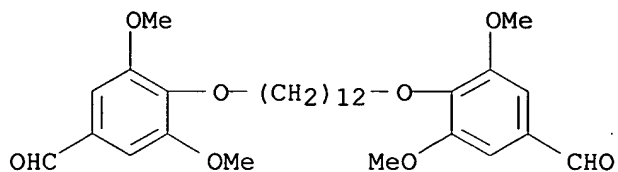
CRN 221615-56-1  
 CMF C52 H42 N2 O P2 . 2 Br



● 2 Br<sup>-</sup>

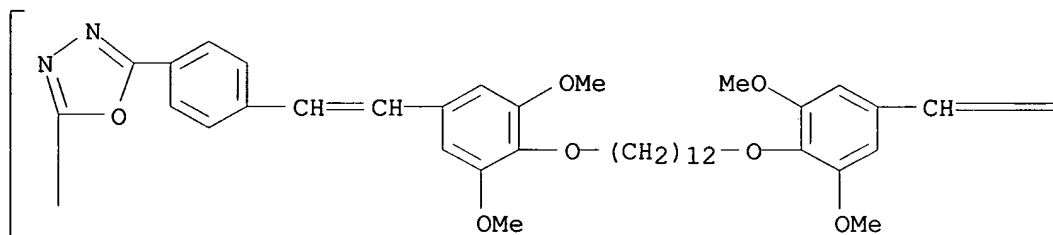
CM 2

CRN 204185-73-9  
CMF C30 H42 O8

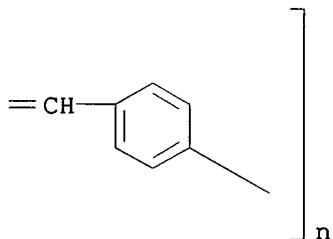


RN 246246-53-7 HCAPLUS  
CN Poly[1,3,4-oxadiazole-2,5-diyl-1,4-phenylene-1,2-ethenediyl(3,5-dimethoxy-1,4-phenylene)oxy-1,12-dodecanediylloxy(2,6-dimethoxy-1,4-phenylene)-1,2-ethenediyl-1,4-phenylene] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



RE.CNT 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L71 ANSWER 24 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
AN 1997:217392 HCAPLUS  
DN 126:278097  
TI A blue light emitting copolymer with charge transporting and  
photo-crosslinkable functional units  
AU Li, Xiao-Chang; Yong, Tuck-Mun; Gruener, Johannes; Holmes, Andrew B.;  
Moratti, Stephen C.; Cacialli, Franco; Friend, Richard H.  
CS Department of Chemistry, University of Cambridge, Lensfield Road,  
Cambridge, CB2 1EW, UK  
SO Synthetic Metals (1997), 84(1-3), 437-438  
CODEN: SYMEDZ; ISSN: 0379-6779  
PB Elsevier

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

DT Journal  
LA English  
AB The synthesis of a new polymethacrylate copolymer bearing an efficient blue light emitting distyrylbenzene chromophore, a charge transporting aromatic oxadiazole and a UV-sensitive crosslinkable cinnamoyl unit was reported. The statistical copolymer was synthesized via a multi-step route and was characterized by NMR, FTIR, and DSC. The copolymer had excellent solution processibility and exhibited strong **luminescence**. Upon crosslinking via UV-treatment, the copolymer became insol., while gaining both mech. strength and thermal stability without loss of **luminescence**. The structure and properties of this novel copolymer and its application in light emitting **devices** were discussed.

CC 37-3 (Plastics Manufacture and Processing)  
Section cross-reference(s): 38, 73

ST blue light emitting methacrylate copolymer; LED blue methacrylate copolymer; oxadiazole contg methacrylate copolymer blue LED; distyrylbenzene contg methacrylate copolymer blue LED; cinnamoyl contg methacrylate copolymer blue LED

IT **Electroluminescent devices**  
(blue-emitting; methacrylate copolymer containing distyrylbenzene- and cinnamoyl- and oxadiazole group for)

IT Crosslinking  
**Luminescence**  
**Luminescence, electroluminescence**  
(of methacrylate copolymer containing distyrylbenzene- and cinnamoyl- and oxadiazole group)

IT 7429-90-5, Aluminum, uses 7440-70-2, Calcium, uses 50926-11-9, ITO  
RL: **DEV (Device component use)**; **USES (Uses)**  
(LED prepared from methacrylate copolymer derivative and ITO and calcium or aluminum)

IT **188953-96-0P**  
RL: **DEV (Device component use)**; **SPN (Synthetic preparation)**; **TEM (Technical or engineered material use)**; **PREP (Preparation)**; **USES (Uses)**  
(blue LED; preparation and characterization of)

IT **188953-96-0P**  
RL: **DEV (Device component use)**; **SPN (Synthetic preparation)**; **TEM (Technical or engineered material use)**; **PREP (Preparation)**; **USES (Uses)**  
(blue LED; preparation and characterization of)

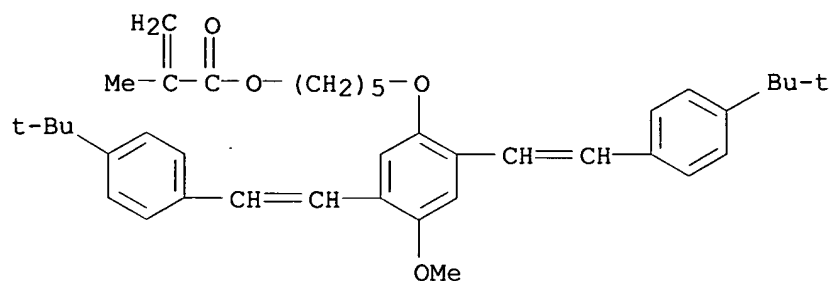
RN 188953-96-0 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, [4-(5-[1,1'-biphenyl]-4-yl-1,3,4-oxadiazol-2-yl)phenyl]methyl ester, polymer with 5-[2,5-bis[2-[4-(1,1-dimethylethyl)phenyl]ethenyl]-4-methoxyphenoxy]pentyl 2-methyl-2-propenoate and 2-[(1-oxo-3-phenyl-2-propenyl)oxy]ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 174368-28-6  
CMF C40 H50 O4

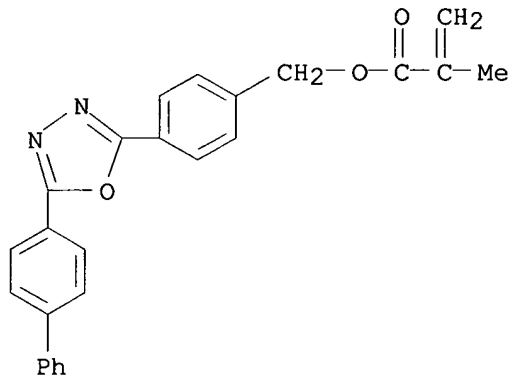




CM 2

CRN 173740-37-9

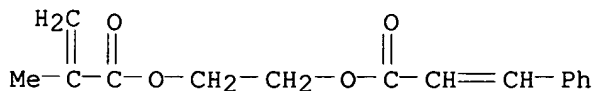
CMF C25 H20 N2 O3



CM 3

CRN 41261-99-8

CMF C15 H16 O4



L71 ANSWER 25 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1996:534872 HCAPLUS

DN 125:180932

TI Polymers for use in optical **devices**

IN Holmes, Andrew Bruce; Li, Xiao-Chang; Moratti, Stephen Carl; Murray, Kenneth Andrew; Friend, Richard Henry

PA Cambridge Display Technology Ltd., UK

SO PCT Int. Appl., 73 pp.

CODEN: PIXXD2

DT Patent

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

LA English

FAN.CNT 1

|    | PATENT NO.   | KIND | DATE     | APPLICATION NO. | DATE        |
|----|--|------|----------|-----------------|-------------|
| PI | WO 9620253   | A1   | 19960704 | WO 1995-GB3043  | 19951228    |
|    | W: JP, KR, US  |      |          |                 |             |
|    | RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE |      |          |                 |             |
|    |  |      |          | GB 1994-26288   | A 19941228  |
|    |  |      |          | GB 1995-10155   | A 19950519  |
|    | EP 800563  | A1   | 19971015 | EP 1995-941813  | 19951228    |
|    | EP 800563  | B1   | 20000712 |                 |             |
|    | R: DE, GB, NL  |      |          |                 |             |
|    |  |      |          | GB 1994-26288   | A 19941228  |
|    |  |      |          | GB 1995-10155   | A 19950519  |
|    |  |      |          | WO 1995-GB3043  | W 19951228  |
|    | JP 10511718  | T2   | 19981110 | JP 1996-520312  | 19951228    |
|    |  |      |          | GB 1994-26288   | A 19941228  |
|    |  |      |          | GB 1995-10155   | A 19950519  |
|    |  |      |          | WO 1995-GB3043  | W 19951228  |
|    | EP 1291406   | A1   | 20030312 | EP 2002-80081   | 19951228    |
|    | R: DE, GB, NL  |      |          |                 |             |
|    |  |      |          | GB 1994-26288   | A 19941228  |
|    |  |      |          | GB 1995-10155   | A 19950519  |
|    |  |      |          | EP 1995-941813  | A3 19960704 |
|    |  |      |          | EP 1999-124732  | A3 19991213 |
|    | JP 2003231740  | A2   | 20030819 | JP 2002-340806  | 19951228    |
|    |  |      |          | GB 1994-26288   | A 19941228  |
|    |  |      |          | GB 1995-10155   | A 19950519  |
|    |  |      |          | JP 1996-520312  | A3 19951228 |
|    | EP 1006169   | A1   | 20000607 | EP 1999-124732  | 19991213    |
|    | R: DE, GB, NL  |      |          |                 |             |
|    |  |      |          | GB 1994-26288   | A 19941228  |
|    |  |      |          | GB 1995-10155   | A 19950519  |
|    |  |      |          | EP 1995-941813  | A3 19951228 |
|    | US 2003008991  | A1   | 20030109 | US 2000-561831  | 20000428    |
|    | US 6559256   | B2   | 20030506 |                 |             |
|    |  |      |          | GB 1994-26288   | A 19941228  |
|    |  |      |          | GB 1995-10155   | A 19950519  |
|    |  |      |          | WO 1995-GB3043  | W 19951128  |
|    |  |      |          | US 1997-875049  | B3 19970624 |
|    | US 6723811   | B1   | 20040420 | US 2000-561847  | 20000428    |
|    |  |      |          | GB 1994-26288   | A 19941228  |
|    |  |      |          | GB 1995-10155   | A 19950519  |
|    |  |      |          | US 1997-875049  | B3 19970624 |
|    | US 2003166810  | A1   | 20030904 | US 2002-313252  | 20021206    |
|    |  |      |          | GB 1994-26288   | A 19941228  |
|    |  |      |          | GB 1995-10155   | A 19950519  |
|    |  |      |          | US 1997-875049  | B3 19970624 |
|    |  |      |          | US 2000-561847  | A3 20000428 |
|    | US 2004059077  | A1   | 20040325 | US 2003-642097  | 20030815    |
|    |  |      |          | GB 1994-26288   | A 19941228  |
|    |  |      |          | GB 1995-10155   | A 19950519  |
|    |  |      |          | US 1997-875049  | B3 19970624 |
|    |  |      |          | US 2000-561847  | A3 20000428 |

AB Semiconductive polymers capable of **luminescence** in an optical **device** are described which comprise a **luminescent** film-forming solvent-processible polymer which is crosslinked so as to increase its molar mass and to resist solvent dissoln., the crosslinking being such that the polymer retains its semiconductive and

luminescent properties. Polymers capable of charge transport in an optical **device** are also described which comprise a film-forming polymer which is solvent processible or formed from a processible precursor polymer and which includes a charge transport segment in the polymer main chain or covalently linked thereto in a charge transport side chain. Optical **devices** (e.g., **electroluminescent devices**) employing the polymers are described. Processes for the production of the semiconductive polymers entail providing a **luminescent** film-forming solvent-processible polymer and crosslinking the solvent processible polymer under conditions so as to increase its molar mass whereby the polymer is made resistant to solvent dissoln. and retains its semiconductive and **luminescent** properties.

- IC ICM C09K011-06  
ICS H05B033-14; H01L033-00; H05B033-10
- CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 38
- ST charge transport polymer optical **device**; **luminescent** polymer optical **device**; crosslinked polymer optical **device**; **electroluminescent device** crosslinked polymer
- IT Crosslinking  
Electroluminescent devices  
Luminescent substances  
(crosslinked **luminescent** and charge transporting polymers for use in optical **devices**)
- IT Semiconductor materials  
(polymeric; crosslinked **luminescent** and charge transporting polymers for use in optical **devices**)
- IT Polymers  
RL: DEV (**Device component use**); IMF (Industrial manufacture); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polythiophenes, crosslinked **luminescent** and charge transporting polymers for use in optical **devices**)
- IT 26916-42-7P 26916-43-8P 27027-59-4P 170892-77-0P 180598-92-9P  
180598-95-2P 180599-00-2P  
RL: DEV (**Device component use**); IMF (Industrial manufacture); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(crosslinked **luminescent** and charge transporting polymers for use in optical **devices**)
- IT 9011-14-7P, Polymethyl methacrylate  
RL: DEV (**Device component use**); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(crosslinked **luminescent** and charge transporting polymers for use in optical **devices**)
- IT 173740-36-8P 173740-38-0P 173740-40-4P 173740-41-5P 180598-91-8P  
RL: DEV (**Device component use**); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(crosslinked **luminescent** and charge transporting polymers for use in optical **devices**)
- IT 54549-74-5P 173740-35-7P 173740-39-1P 174368-30-0P 174368-31-1P  
180598-89-4P 180598-90-7P 180599-01-3P 180599-02-4P 180599-03-5P  
180599-04-6P  
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(crosslinked **luminescent** and charge transporting polymers for use in optical **devices**)

IT 99-63-8, 1,3-Benzenedicarbonyl dichloride 120-61-6 121-44-8, reactions  
623-25-6 920-46-7, Methacryloyl chloride 1171-47-7,  
2,2-Bis(4-carboxyphenyl)hexafluoropropane 2359-09-3 69249-61-2  
173740-37-9 180598-93-0 180598-94-1 180598-96-3

RL: RCT (Reactant); RACT (Reactant or reagent)

(crosslinked **luminescent** and charge transporting polymers for use in optical **devices**)

IT 136-64-1P 4546-04-7P 15561-46-3P 18622-23-6P 43100-38-5P  
52010-97-6P, Benzaldehyde, 4-(hydroxymethyl)- 78616-33-8P 81172-89-6P  
85943-26-6P 180598-97-4P 180598-98-5P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(crosslinked **luminescent** and charge transporting polymers for use in optical **devices**)

IT 27576-11-0P 59764-67-9P

RL: RCT (Reactant); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)

(crosslinked **luminescent** and charge transporting polymers for use in optical **devices**)

IT 180598-95-2P

RL: DEV (Device component use); IMF (Industrial manufacture); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(crosslinked **luminescent** and charge transporting polymers for use in optical **devices**)

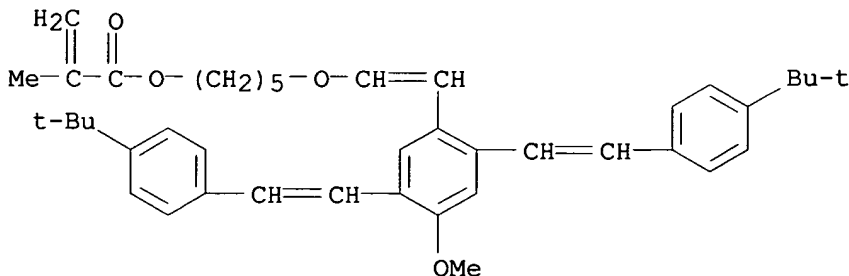
RN 180598-95-2 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, [4-(5-[1,1'-biphenyl]-4-yl-1,3,4-oxadiazol-2-yl)phenyl]methyl ester, polymer with 5-[[2-[2,5-bis[2-[4-(1,1-dimethylethyl)phenyl]ethenyl]-4-methoxyphenyl]ethenyl]oxy]pentyl 2-methyl-2-propenoate and 2-[(2-phenylethenyl)oxy]ethyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 180598-94-1

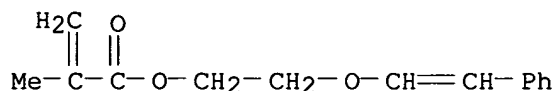
CMF C42 H52 O4



CM 2

CRN 180598-93-0

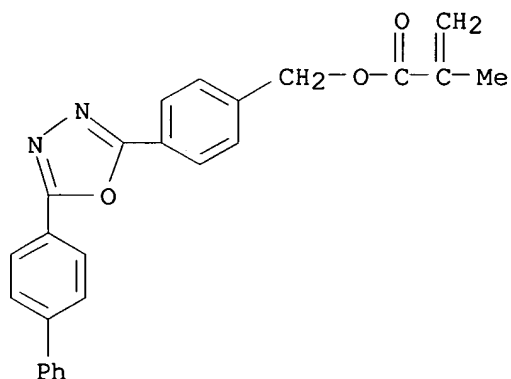
CMF C14 H16 O3



CM 3

CRN 173740-37-9

CMF C25 H20 N2 O3



L71 ANSWER 26 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1996:84419 HCAPLUS

DN 124:159818

TI Polymer light emitting diodes

AU Greczmiel, Michael; Poesch, Peter; Schmidt, Hans-Werner; Strohriegl, Peter; Buchwald, Elke; Meier, Martin; Riess, Walter; Schwoerer, Markus

CS Makromolekulare Chemie I, Universitaet Bayreuth, Bayreuth, 95440, Germany

SO Macromolecular Symposia (1996), 102(9th Rolduc Polymer Meeting, Smart Polymer Materials &amp; Products, 1995), 371-80

CODEN: MSYMEC; ISSN: 1022-1360

PB Huethig &amp; Wepf

DT Journal

LA English

AB Monolayer light emitting diodes from poly(1,4-phenylenevinylene) (PPV) usually exhibit relatively low quantum efficiencies. So the external efficiency of an ITO/PPV/Ca LED is typically 0.01%. To increase the quantum yield in bilayer **devices**, oxadiazole polymers were used. The syntheses of a number of novel polymethacrylates with pendant oxadiazole groups and some aromatic polyethers with oxadiazole units in the main chain are described. These polymers with the electron withdrawing oxadiazole units facilitate electron injection and transport in bilayer LEDs with PPV as hole transport layer. Thus an LED with a top layer of the polyether 3a exhibits a 10-fold increase of the external quantum efficiency to 0.1%. Compared to conventional PPV LEDs, the improved bilayer **devices** show intense emission at low current densities.

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST LED methacrylate oxadiazole phenylenevinylene polymer; light emitting diode polymer methacrylate oxadiazole

IT **Electroluminescent devices**  
 (polymer light emitting diodes)

IT 7440-70-2, Calcium, uses 26009-24-5, Poly(1,4-phenylenevinylene)  
 50926-11-9, ITO  
 RL: **DEV (Device component use); USES (Uses)**  
 (polymer light emitting diodes)

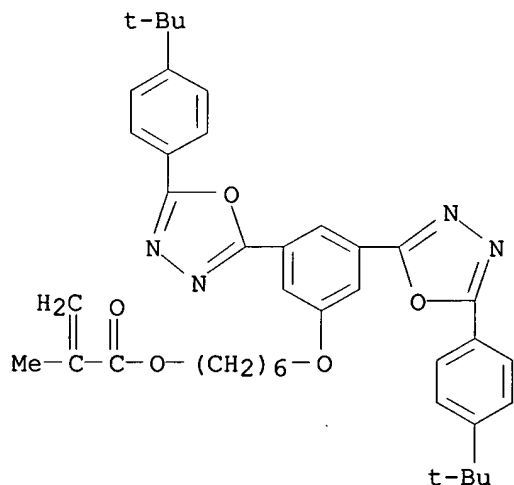
IT 25135-57-3P 26498-51-1P 134438-35-0P 134438-36-1P 138372-67-5P  
 160109-74-0P 173324-70-4P 173865-06-0P 173865-08-2P 173865-10-6P  
**173865-11-7P** 173865-12-8P 173865-13-9P 173865-14-0P  
 173865-15-1P  
 RL: **DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)**  
 (polymer light emitting diodes)

IT 80-05-7, reactions 324-81-2 339-59-3 613-94-5 636-97-5 1478-61-1  
 13036-02-7 27914-73-4 148140-89-0  
 RL: **RCT (Reactant); RACT (Reactant or reagent)**  
 (polymer light emitting diodes)

IT **173865-11-7P**  
 RL: **DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)**  
 (polymer light emitting diodes)

RN 173865-11-7 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 6-[3,5-bis[5-[4-(1,1-dimethylethyl)phenyl]-1,3,4-oxadiazol-2-yl]phenoxy]hexyl ester (9CI) (CA INDEX NAME)



L71 ANSWER 27 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1996:38081 HCAPLUS

DN 124:215580

TI Charge transport polymers for light emitting diodes

AU Li, Xiao Chang; Cacialli, Franco; Giles, Mark; Gruener, Johannes; Friend, Richard H.; Holmes, Andrew B.; Moratti, Stephen C.; Yong, Tuck Mun

CS Dep. Chem., Univ. Cambridge, Cambridge, CB2 3RA, UK

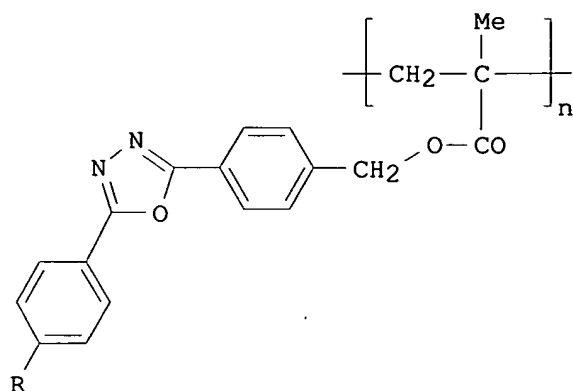
SO Advanced Materials (Weinheim, Germany) (1995), 7(11), 898-900

CODEN: ADVMEW; ISSN: 0935-9648

PB VCH

DT Journal

LA English  
GI



AB Electron transport polymethacrylates containing chemical bound oxadiazole side chain chromophores (I; R=Me<sub>3</sub>C, Ph), and related copolymers were synthesized. They improve the quantum efficiency, lower the turn-on voltage, and enable the use of Al electrodes in LEDs. Three applications in sandwich **devices** were demonstrated: I (R = tert-butyl; Ph) was applied as a single layer between cathode and a poly(p-phenylenevinylene) (PPV) emissive layer; blended with an emissive polymer and in a copolymer formed with an emissive unit. The **electroluminescence** was studied giving a green-yellow and blue light in the 1st and 3rd case, resp.

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

Section cross-reference(s): 36

ST charge transport polymer light emitting diode; oxadiazole methacrylate polymer chromophore LED; **photoluminescence**  
**electroluminescence** oxadiazole polymer LED

IT Electric conductors, polymeric

**Electroluminescent devices**

Glass temperature and transition

(charge transport polymers for LEDs)

IT Molecular structure-property relationship

(glass temperature, charge transport polymers for LEDs)

IT 173740-36-8P 173740-38-0P 173740-40-4P 173740-41-5P 174368-32-2P  
174368-33-3P **174368-34-4P 174368-35-5P**

RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(charge transport polymers for LEDs)

IT 173740-35-7P 173740-37-9P 174368-30-0P 174368-31-1P

RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(charge transport polymers for LEDs)

IT 18622-23-6 43100-38-5 78616-33-8 173740-39-1 174368-28-6  
174368-29-7

RL: RCT (Reactant); RACT (Reactant or reagent)

(charge transport polymers for LEDs)

IT **174368-34-4P 174368-35-5P**

RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(charge transport polymers for LEDs)

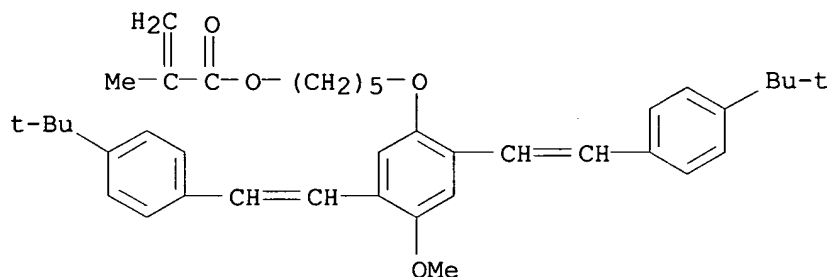
RN 174368-34-4 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, [4-(5-[1,1'-biphenyl]-4-yl-1,3,4-oxadiazol-2-yl)phenyl]methyl ester, polymer with 5-[2,5-bis[2-[4-(1,1-dimethylethyl)phenyl]ethenyl]-4-methoxyphenoxy]pentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 174368-28-6

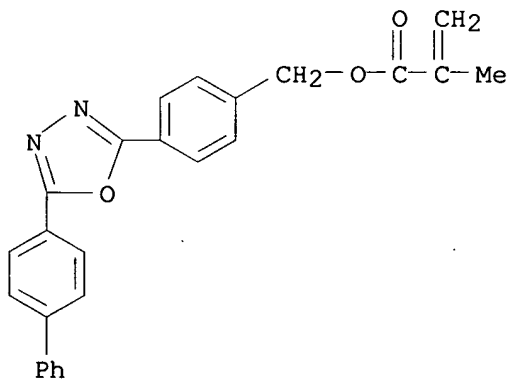
CMF C40 H50 O4



CM 2

CRN 173740-37-9

CMF C25 H20 N2 O3



RN 174368-35-5 HCAPLUS

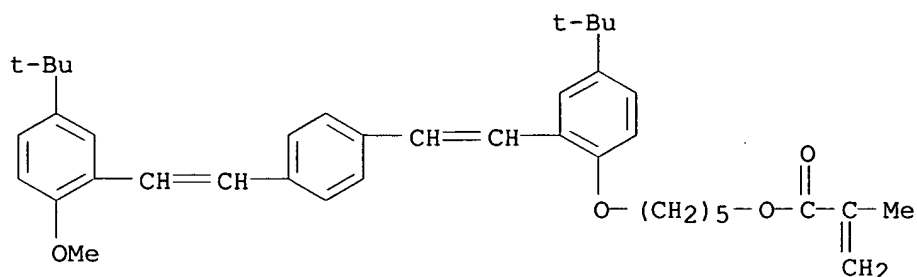
CN 2-Propenoic acid, 2-methyl-, [4-(5-[1,1'-biphenyl]-4-yl-1,3,4-oxadiazol-2-yl)phenyl]methyl ester, polymer with 5-[4-(1,1-dimethylethyl)-2-[2-[4-[2-[5-(1,1-dimethylethyl)-2-methoxyphenyl]ethenyl]phenyl]ethenyl]phenoxy]pentyl 2-methyl-2-propenoate (9CI) (CA INDEX NAME)

CM 1

CRN 174368-29-7

CMF C40 H50 O4

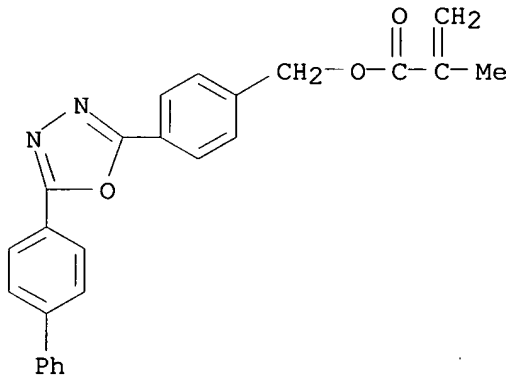




CM 2

CRN 173740-37-9

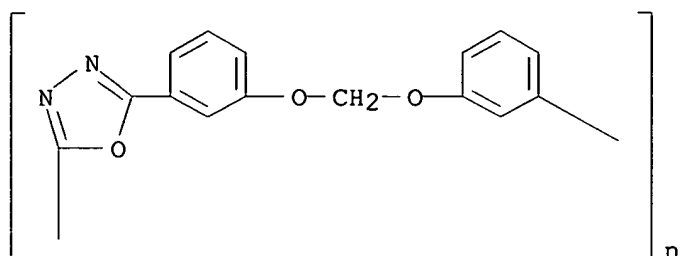
CMF C25 H20 N2 O3



L71 ANSWER 28 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1995:938816 HCAPLUS  
 DN 124:17734  
 TI Effects of Polymeric Electron Transporters and the Structure of  
 Poly(p-phenylenevinylene) on the Performance of Light-Emitting Diodes  
 AU Strukelj, Marko; Miller, Timothy M.; Papadimitrakopoulos, Fotis; Son,  
 Sehwon  
 CS AT and T Bell Laboratories, Murray Hill, NJ, 07974, USA  
 SO Journal of the American Chemical Society (1995), 117(48), 11976-83  
 CODEN: JACSAT; ISSN: 0002-7863  
 PB American Chemical Society  
 DT Journal  
 LA English  
 AB New electroactive monomers containing 2,5-diphenyl-1,3-oxazole,  
 2,5-diphenyl-1,3,4-oxadiazole, and 3,4,5-triphenyl-1,2,4-triazole  
 heterocycles were synthesized in good yield. These monomers were  
 incorporated as either pendant groups or directly into the backbone of 10  
 high mol. weight polymers [poly(aryl methacrylate), poly(arylmethacrylamide),  
 poly(aryl formal), and poly(aryl ether)]. The polymers apparently are  
 amorphous and exhibit glass transition temps. of 115-208°, and most  
 have good thermal stability in air (decomposition >400°). Thin, clear,  
 pinhole free-films are readily deposited on a variety of substrates (e.g.,

Si, SiO<sub>2</sub>) by spin coating. These materials were used as the electron transport (ET) layer in LEDs having an ET layer deposited on PPV with Al and In Sn oxide electrodes (i.e., Al/ET layer/PPV/ITO). The ET materials contain ≤97 mol % of the electroactive moiety, while conventional electron transporters (e.g., PBD dissolved in PMMA) contain 46 mol %. LEDs containing these ET polymers were much more stable than **devices** without an ET. Many were also more stable than those having a conventional electron transporter. Relative to LEDs without ETs, the internal quantum efficiencies using ETs were higher in some cases and lower in others. In addition to varying the ET layer, 2 different types of PPV (crystalline and amorphous) were also used to construct 4 different types of **devices**. In terms of diode efficiency, the most important factor is the PPV conjugation length and not the type of ET used. The internal quantum efficiencies ranged from 0.2 to 0.0004%. The current/voltage curves of some of the LEDs were fitted to 4 different models to determine which best describes the **device** physics.

- CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
 Section cross-reference(s): 35, 36, 38, 76
- ST polymeric electron transporter structure polyphenylenevinylene LED  
 IT Polymers, properties  
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
 (electron transporters effects on LED performance)
- IT Molecular structure  
 (of poly(phenylenevinylene) with respect to LED performance)
- IT Electric current-potential relationship  
 (polymeric electron transporters and poly(phenylenevinylene) structure effects on LED performance in relation to)
- IT **Electroluminescent devices**  
 (polymeric electron transporters and poly(phenylenevinylene) structure effects on performance of)
- IT Electric transport property  
 (polymeric; effect on LED performance)
- IT 128914-06-7 147398-92-3 **171368-05-1** 171368-06-2  
 171368-07-3 171368-09-5 171368-10-8 171368-11-9 171368-12-0  
 171368-14-2 171368-16-4 171368-17-5 171368-18-6 171368-19-7  
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
 (electron transporters effects on LED performance)
- IT 128914-05-6P 171368-13-1P  
 RL: **DEV (Device component use)**; RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
 (preparation and polymerization for LED of)
- IT 26009-24-5, Poly(p-phenylenevinylene)  
 RL: **DEV (Device component use)**; PRP (Properties); USES (Uses)  
 (structure effects on LED performance)
- IT **171368-05-1**  
 RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
 (electron transporters effects on LED performance)
- RN 171368-05-1 HCAPLUS  
 CN Poly(1,3,4-oxadiazole-2,5-diyl-1,3-phenyleneoxymethyleneoxy-1,3-phenylene) (9CI) (CA INDEX NAME)



L71 ANSWER 29 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN  
 AN 1995:806225 HCAPLUS  
 DN 124:30525  
 TI Bright blue **electroluminescence** from an oxadiazole-containing copolymer  
 AU Pei, Qibing; Yang, Yang  
 CS UNIAX Corp., Santa Barbara, CA, 93117, USA  
 SO Advanced Materials (Weinheim, Germany) (1995), 7(6), 559-61  
 CODEN: ADVMEW; ISSN: 0935-9648  
 PB VCH  
 DT Journal  
 LA English  
 AB Blue **electroluminescence** of a synthesized polyoxadiazole-polyether (OP) film is reported. LED **devices** were prepared by combination of this OP film with other polymeric layers (e.g. conducting polyaniline) between In-Sn-oxide and a Ca electrode. The external quantum efficiency was increased to 0.1% and the intensity of the blue emitted light to 40 cd/m<sup>2</sup>.  
 CC 35-5 (Chemistry of Synthetic High Polymers)  
 Section cross-reference(s): 73  
 ST polyoxadiazole polyether **electroluminescence** LED  
 IT **Electroluminescent devices**  
 (quantum efficiency of LEDs with oxadiazole-containing polymeric layers)  
 IT Polyamines  
 RL: **DEV (Device component use)**; USES (Uses)  
 (aniline-based, dodecylbenzenesulfonic acid-doped; quantum efficiency of LEDs with oxadiazole-containing polymeric layers)  
 IT Polyoxadiazoles  
 RL: **DEV (Device component use)**; USES (Uses)  
 (fluorine-containing, quantum efficiency of LEDs with oxadiazole-containing polymeric layers)  
 IT Polyoxadiazoles  
 RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (polyether-, preparation and quantum efficiency of LEDs with oxadiazole-containing polymeric layers)  
 IT Polyhydrazides  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (polyether-, preparation and quantum efficiency of LEDs with oxadiazole-containing polymeric layers)  
 IT Polyethers, preparation  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (polyhydrazide-, preparation and quantum efficiency of LEDs with oxadiazole-containing polymeric layers)

IT Polyethers, preparation  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (polyoxadiazole-, preparation and quantum efficiency of LEDs with oxadiazole-containing polymeric layers)

IT Fluoropolymers  
 RL: DEV (Device component use); USES (Uses)  
 (polyoxadiazole-, quantum efficiency of LEDs with oxadiazole-containing polymeric layers)

IT 25233-30-1, Polyaniline  
 RL: DEV (Device component use); USES (Uses)  
 (dodecylbenzenesulfonic acid-doped; quantum efficiency of LEDs with oxadiazole-containing polymeric layers)

IT 27176-87-0, Dodecylbenzenesulfonic acid  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (dopant; quantum efficiency of LEDs with oxadiazole-containing polymeric layers)

IT 165898-17-9P  
 RL: DEV (Device component use); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)  
 (preparation and quantum efficiency of LEDs with oxadiazole-containing polymeric layers)

IT 165898-20-4P  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (preparation and quantum efficiency of LEDs with oxadiazole-containing polymeric layers)

IT 165898-18-0P  
 RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
 (preparation and quantum efficiency of LEDs with oxadiazole-containing polymeric layers)

IT 26916-42-7  
 RL: DEV (Device component use); USES (Uses)  
 (quantum efficiency of LEDs with oxadiazole-containing polymeric layers)

IT 165898-20-4P  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (preparation and quantum efficiency of LEDs with oxadiazole-containing polymeric layers)

RN 165898-20-4 HCAPLUS

CN Poly[1,3,4-oxadiazole-2,5-diyl[2,5-bis(dodecyloxy)-1,4-phenylene]-1,3,4-oxadiazole-2,5-diyl-1,4-phenyleneoxy-1,2-ethanediyl-1,2-ethanediyl-1,2-ethanediyl-1,4-phenylene] (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

L71 ANSWER 30 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1995:726577 HCAPLUS

DN 123:84159

TI 1,3,4-Oxadiazole-Containing Polymers as Electron-Injection and Blue  
**Electroluminescent** Materials in Polymer Light-Emitting Diodes

AU Pei, Q.; Yang, Y.

CS UNIAX Corporation, Santa Barbara, CA, 93117, USA

SO Chemistry of Materials (1995), 7(8), 1568-75

CODEN: CMATEX; ISSN: 0897-4756

PB American Chemical Society

DT Journal

LA English

AB Three 1,3,4-oxadiazole-containing polymers with different solubility and conjugation length (repeating units of phenylene and oxadiazole) were synthesized and characterized. Among them, the polymer with the shortest conjugation length (2 phenylene and one oxadiazole rings) had the widest  $\pi$ - $\pi^*$  bandgap and was not fluorescent. As an electron-injection material, it was successfully used to improve the quantum efficiency of polymer light-emitting diodes (LEDs) using dialkoxy derivs. of poly(1,4-phenylenevinylene) as the **electroluminescent** layer and Al as the cathode. The second polymer, with an addnl. oxadiazole ring in the conjugated segment, was also an electron-injection polymer. This extra oxadiazole ring further enhanced the electron transport property and lowered the LED operating voltage more than the first polymer. The third 1,3,4-oxadiazole-containing polymer, with an even longer conjugation length, had strong blue fluorescence. Blue LEDs were fabricated using this polymer as the **electroluminescent** layer, conducting polyaniline as the hole-injection layer, Ca as the cathode, and the first 1,3,4-oxadiazole-containing polymer as the electron-injection layer. These **devices** emitted a bright blue light, with 4.5 V of turn-on voltage and 0.1% of external quantum efficiency.

CC 35-5 (Chemistry of Synthetic High Polymers)

Section cross-reference(s): 73

ST oxadiazole polymer prepn property; electron injection oxadiazole polymer

IT Infrared spectra

#### **Luminescence**

Ultraviolet and visible spectra

(of oxadiazole-containing polymers for electron-injection and blue  
**electroluminescent** materials in polymer light-emitting diodes)

IT Polyoxadiazoles

RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(preparation, characterization and optical properties of

oxadiazole-containing

polymers as electron-injection and blue **electroluminescent**  
materials in polymer light-emitting diodes)

IT **Electroluminescent devices**

(blue-emitting, preparation, characterization and optical properties of  
oxadiazole-containing polymers as electron-injection and blue  
**electroluminescent** materials in polymer light-emitting diodes)

IT Polyhydrazides

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)

(fluorine-containing, intermediates; preparation, characterization and

optical

properties of oxadiazole-containing polymers as electron-injection and blue  
**electroluminescent** materials in polymer light-emitting diodes)

IT Polyhydrazides

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT

- (Reactant or reagent)  
(polyether-, intermediates; preparation, characterization and optical properties of oxadiazole-containing polymers as electron-injection and blue **electroluminescent** materials in polymer light-emitting diodes)
- IT Fluoropolymers  
Polyethers, preparation  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(polyhydrazide-, intermediates; preparation, characterization and optical properties of oxadiazole-containing polymers as electron-injection and blue **electroluminescent** materials in polymer light-emitting diodes)
- IT Fluoropolymers  
RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(polyoxadiazole-, preparation, characterization and optical properties of oxadiazole-containing polymers as electron-injection and blue **electroluminescent** materials in polymer light-emitting diodes)
- IT 165898-16-8P, 2,5-Didodecyloxyterephthalic dihydrazide  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(monomer; preparation, characterization and optical properties of oxadiazole-containing polymers as electron-injection and blue **electroluminescent** materials in polymer light-emitting diodes)
- IT 26916-42-7P, 4,4'-(Hexafluoroisopropylidenebis(benzoic acid)-hydrazine monohydrochloride copolymer, SRU 165898-19-1P, 4,4'-(Hexafluoroisopropylidenebis(benzoyl chloride)-oxalic dihydrazide copolymer, SRU **165898-20-4P**, 1,2-Bis[2-(4-chloroformylphenoxy)ethoxy]ethane-2,5-didodecyloxyterephthalic dihydrazide copolymer, SRU  
RL: **DEV (Device component use)**; PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(preparation, characterization and optical properties of oxadiazole-containing polymers as electron-injection and blue **electroluminescent** materials in polymer light-emitting diodes)
- IT 26916-39-2P, 4,4'-(Hexafluoroisopropylidenebis(benzoic acid)-hydrazine monohydrochloride copolymer 165898-13-5P, 4,4'-(Hexafluoroisopropylidenebis(benzoic acid)-hydrazine monohydrochloride copolymer 165898-14-6P, 4,4'-(Hexafluoroisopropylidenebis(benzoyl chloride)-oxalic dihydrazide copolymer 165898-15-7P, 4,4'-(Hexafluoroisopropylidenebis(benzoyl chloride)-oxalic dihydrazide copolymer, SRU 165898-18-0P, 1,2-Bis[2-(4-chloroformylphenoxy)ethoxy]ethane-2,5-didodecyloxyterephthalic dihydrazide copolymer, SRU  
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)  
(preparation, characterization and optical properties of oxadiazole-containing polymers as electron-injection and blue **electroluminescent** materials in polymer light-emitting diodes)
- IT 112-26-5, 1,2-Bis(chloroethoxy)ethane 120-47-8, Ethyl 4-hydroxybenzoate 143-15-7, 1-Bromododecane 302-01-2, Hydrazine, reactions 5870-38-2, Diethyl 2,5-dihydroxyterephthalate  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation, characterization and optical properties of oxadiazole-containing polymers as electron-injection and blue **electroluminescent** materials in polymer light-emitting diodes)
- IT 105744-17-0P, 1,2-Bis[2-(4-chloroformylphenoxy)ethoxy]ethane 126297-18-5P, Diethyl 2,5-didodecyloxyterephthalate  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT

(Reactant or reagent)  
 (preparation, characterization and optical properties of  
 oxadiazole-containing  
 polymers as electron-injection and blue **electroluminescent**  
 materials in polymer light-emitting diodes)  
 IT 165898-17-9P, 1,2-Bis[2-(4-chloroformylphenoxy)ethoxy]ethane-2,5-  
 didodecyloxyterephthalic dihydrazide copolymer  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (preparation, characterization and optical properties of  
 oxadiazole-containing  
 polymers as electron-injection and blue **electroluminescent**  
 materials in polymer light-emitting diodes)  
 IT 165898-20-4P, 1,2-Bis[2-(4-chloroformylphenoxy)ethoxy]ethane-2,5-  
 didodecyloxyterephthalic dihydrazide copolymer, SRU  
 RL: DEV (**Device component use**); PRP (Properties); SPN (Synthetic  
 preparation); PREP (Preparation); USES (Uses)  
 (preparation, characterization and optical properties of  
 oxadiazole-containing  
 polymers as electron-injection and blue **electroluminescent**  
 materials in polymer light-emitting diodes)  
 RN 165898-20-4 HCAPLUS  
 CN Poly[1,3,4-oxadiazole-2,5-diyl[2,5-bis(dodecyloxy)-1,4-phenylene]-1,3,4-  
 oxadiazole-2,5-diyl-1,4-phenyleneoxy-1,2-ethanediyl-1,2-ethanediyl-1,2-ethanediyl-1,4-phenylene] (9CI) (CA INDEX NAME)

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

L71 ANSWER 31 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1994:641370 HCAPLUS

DN 121:241370

TI Organic **electroluminescent devices**

IN Naito, Katsuyuki

PA Tokyo Shibaura Electric Co, Japan

SO Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

|    | PATENT NO.  | KIND | DATE     | APPLICATION NO. | DATE     |
|----|-------------|------|----------|-----------------|----------|
|    | -----       | ---- | -----    | -----           | -----    |
| PI | JP 06096860 | A2   | 19940408 | JP 1992-243790  | 19920911 |
|    |             |      |          | JP 1992-243790  | 19920911 |

AB The title **device** comprises: an amorphous phosphor layer containing a mixture of the phosphor and a compound which will be converted to the phosphor by the heat generated by the **device** during the operation, wherein the process prevents the growth of the microcrystallites in the phosphor layer, thus gives a long-life **device** stability.

IC ICM H05B033-14

ICS C09K011-06

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

ST **electroluminescent** amorphous org phosphor recrystn prevention

IT **Electroluminescent devices**  
 (stabilization of **device** by mixing phosphor with compound thermally convertible to phosphor for preventing recrystn.)

IT Phosphors  
 (stabilization of **electroluminescent device** by mixing electron-transporter with compound thermally convertible to transporter for preventing recrystn.)

IT 58473-78-2  
 RL: **DEV (Device component use)**; NUU (Other use, unclassified);  
 TEM (Technical or engineered material use); USES (Uses)  
 (hole-transporter in organic **electroluminescent devices**)

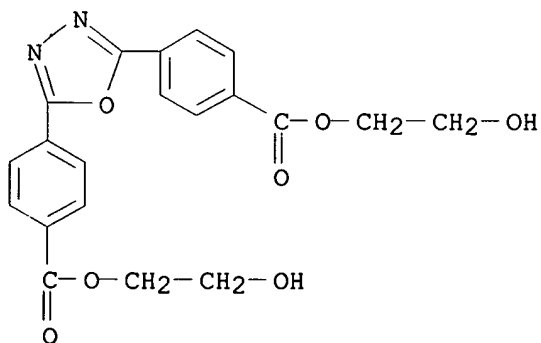
IT 58726-62-8 158606-18-9 158606-19-0 158606-20-3  
 RL: **DEV (Device component use)**; NUU (Other use, unclassified);  
 TEM (Technical or engineered material use); USES (Uses)  
 (stabilization of **electroluminescent device** by mixing electron-transporter with compound thermally convertible to transporter for preventing recrystn.)

IT 148044-06-8 148044-16-0 151225-88-6 158606-12-3 158606-13-4  
 158606-14-5 158606-15-6 158606-16-7 **158606-17-8**  
 RL: **DEV (Device component use)**; NUU (Other use, unclassified);  
 TEM (Technical or engineered material use); USES (Uses)  
 (stabilization of **electroluminescent device** by mixing phosphor with compound thermally convertible to phosphor for preventing recrystn.)

IT **158606-17-8**  
 RL: **DEV (Device component use)**; NUU (Other use, unclassified);  
 TEM (Technical or engineered material use); USES (Uses)  
 (stabilization of **electroluminescent device** by mixing phosphor with compound thermally convertible to phosphor for preventing recrystn.)

RN 158606-17-8 HCAPLUS

CN Benzoic acid, 4,4'-(1,3,4-oxadiazole-2,5-diyl)bis-, bis(2-hydroxyethyl) ester (9CI) (CA INDEX NAME)



L71 ANSWER 32 OF 32 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 1992:266293 HCAPLUS

DN 116:266293

TI Oxadiazole derivative-containing **liquid crystal** mixtures

IN Tschierske, Carsten; Zschke, Horst; Hetzheim, Annemarie; Girdziunaite, D.; Kresse, Horst; Demus, Dietrich

PA Martin-Luther-Universitaet Halle-Wittenberg, Germany



SO Ger. (East), 6 pp.

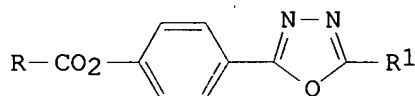
CODEN: GEXXA8

DT Patent

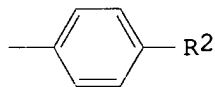
LA German

FAN.CNT 1

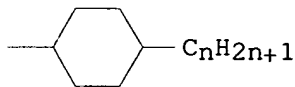
|    | PATENT NO.        | KIND | DATE     | APPLICATION NO. | DATE     |
|----|-------------------|------|----------|-----------------|----------|
| PI | DD 294495         | A5   | 19911002 | DD 1990-340838  | 19900521 |
|    |                   |      |          | DD 1990-340838  | 19900521 |
| OS | MARPAT 116:266293 |      |          |                 |          |
| GI |                   |      |          |                 |          |



I



II



III

AB **Liquid crystal** mixts. useful for optical modulation and imaging applications are described which incorporate  $\geq 1$  2,5-disubstituted 1,3,4-oxadiazole described by the general formula I (R = II, III, or  $C_nH_{2n+1}$ ; R1 = II,  $-SC_nH_{2n+1}$ ,  $-C_nH_{2n+1}$ , or  $-H$ ; R2 =  $-C_nH_{2n+1}$  or  $-OC_nH_{2n+1}$ ).

IC ICM C09K019-34

CC 75-11 (Crystallography and Liquid Crystals)

Section cross-reference(s): 25, 28, 73, 74

ST oxadiazole deriv **liq crystal** mixtIT **Liquid crystals**

(oxadiazole derivs.)

IT Optical imaging **devices**(electro-, **liquid-crystal**, oxadiazole derivative-containing mixts.)

IT Optical instruments

(modulators, **liquid crystal** mixts. containing oxadiazole derivs. for)

IT 139677-28-4 139677-29-5 139677-30-8

RL: PRP (Properties)

**(liquid crystal** mixture)

IT 137030-80-9 137030-81-0 137030-82-1 137030-83-2 137030-84-3

137030-85-4 137030-86-5 137030-87-6 137030-88-7 137030-89-8

137030-90-1 137030-91-2 137030-93-4 137030-94-5 137030-95-6

139677-24-0 139677-25-1 **139677-26-2**

RL: PRP (Properties)

**(liquid crystal** mixture component)

IT 139677-23-9P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation and reaction of, in **liquid crystal** mixture component preparation)

IT 137030-96-7P

RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation and use of, as **liquid crystal** component)

IT 121680-09-9

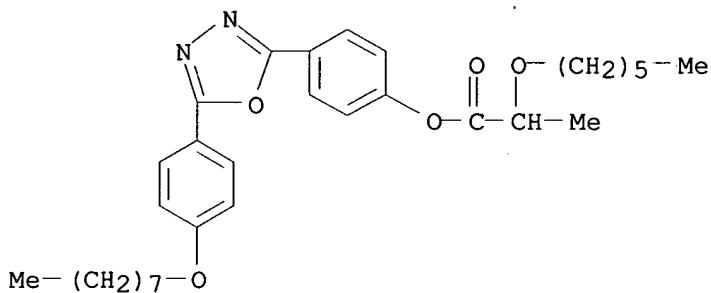
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, in **liquid crystal** mixture component  
preparation)

IT **139677-26-2**

RL: PRP (Properties)  
(**liquid crystal** mixture component)

RN 139677-26-2 HCAPLUS

CN Propanoic acid, 2-(hexyloxy)-, 4-[5-[4-(octyloxy)phenyl]-1,3,4-oxadiazol-2-yl]phenyl ester (9CI) (CA INDEX NAME)



=>